THE

TRANSACTIONS

OF

THE LINNEAN SOCIETY OF LONDON.

SECOND SERIES—VOLUME XV.

ZOOLOGY.

THE PERCY SLADEN TRUST EXPEDITION

TO

THE INDIAN OCEAN IN 1905,

UNDER THE LEADERSHIP OF

MR J. STANLEY GARDINER, M.A.

VOL. IV.

LONDON:

PRINTED AT THE CAMBRIDGE UNIVERSITY PRESS.

SOLD AT THE SOCIETY'S APARTMENTS, BURLINGTON HOUSE;

AND BY LONGMANS, GREEN, AND CO., PATERNOSTER-ROW.

1912—1913.

REPORTS

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VOLUME THE FOURTH

[BEING THE FIFTEENTH VOLUME OF THE SECOND SERIES, ZOOLOGY, OF THE TRANSACTIONS OF THE LINNEAN SOCIETY OF LONDON.]

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PRINTED FOR THE LINNEAN SOCIETY
BY JOHN CLAY, M.A., AT THE UNIVERSITY PRESS, CAMBRIDGE.
SOLD AT THE SOCIETY'S APARTMENTS, BURLINGTON HOUSE;
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MARINE BIOLOGICAL LABORATORY WOODS HOLE MASS.

No. I.—THE LEPIDOPTERA OF SEYCHELLES AND ALDABRA, EXCLUSIVE OF THE ORNEODIDÆ AND PTEROPHORIDÆ AND OF THE TORTRICINA AND TINEINA.

By J. C. F. Fryer, B.A. (Cantab.), *Fellow of Gonville and Caius College and Balfour Student in the University of Cambridge.*

(Plate 1.)

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 15th June, 1911.

This paper contains a description of the Lepidoptera, exclusive of the Tortricidæ, Tineidæ, Orneodidæ, and Pterophoridæ*, of the Seychelles Archipelago, and of the coral islands of Aldabra, Assumption, Cosmoledo and Astove, though the collections from the three latter islands are too small to be considered representative. The collections from the Seychelles were obtained very largely by Mr Hugh Scott, who spent eight months (July 1908—March 1909) in the group and devoted the whole time to entomological collecting. Mr H. P. Thomasset assisted very greatly with the Lepidoptera from Mahé, while Professor Stanley Gardiner obtained a considerable number in the high jungle of Silhouette. Ten days' quarantine on Long Island, near Port Victoria, Mahé, gave me an opportunity of observing the fauna of the low cultivated land, and I subsequently spent three days in the high jungle of Silhouette, which was exceedingly rich in insects. From the end of July to the middle of August I was engaged in investigating the outlying sand cays, Bird and Dennis Islands, and obtained small collections on each.

About five months (September 1908—January 1909) were spent on the coral atoll of Aldabra, 250 miles N.N.W. of Cape Amber, Madagascar, and a few days on each of the neighbouring islands, during which period the greater part of the collection from that region was obtained, though I am also much indebted to Mr Dupont for a collection from Assumption (1910), and to Mr Thomasset for a collection from Aldabra made in the spring of 1907. On my return from Aldabra, a fortnight spent with Mr Thomasset at Cascade, almost on the edge of the indigenous jungle, gave me further opportunity of obtaining some acquaintance with the Seychelles insect fauna.

Mr Scott spent August and September in the high jungle of Silhouette, and the remainder of the period on Mahé, while he paid short visits in December to Praslin, Félicité and Marie Anne. His collections, by far the largest ever made in the archipelago,

* Trans. Linn. Soc., ser. 2, Zool. vol. xiii. (1910) pp. 397—404 (Orneodidæ and Pterophoridæ) and vol. xiv. (1911) pp. 263—307 (Tortricina and Tineina). See also Lepidoptera by T. Bainbrigge Fletcher, id. vol. xiii. (1910) pp. 265—324.

may be considered as thoroughly representative of its Lepidopterous fauna, though from their general facies I should judge there is yet more of great interest to be obtained from the small patches of primitive jungle that still remain—especially on Silhouette. It is of course impossible, even for a collector of the greatest ability, to exhaustively work any single order of insects in a locality when engaged in making collections covering all orders. The deductions of importance, which can be made from such collections as I am about to describe, relate in the main to questions of geographical distribution; in the present paper we have two entirely distinct problems to consider: (1) that of the Seychelles Archipelago; (2) that of Aldabra and the neighbouring islands.

(1) The Seychelles, with the exception of Bird and Dennis Islands, consist of granitic rocks, with a maximum elevation of 3000 ft. The islands were formerly clothed with a jungle of plants very largely peculiar to the archipelago, though cultivation has now reduced it to small areas left on the higher peaks. Professor Stanley Gardiner, both for geographical and biological reasons, considers that the Seychelles form the last remaining portion of a land-bridge which connected India and Madagascar between carboniferous and tertiary times, while he also considers that formerly the whole Seychelles bank (2000 square miles) was capped with land which has been cut down by sea abrasion to the few small islands which at present exist: the lepidopterous fauna, therefore, must be considered in connection with this view.

(2) The atoll of Aldabra and also the neighbouring islands are shown by their structure to have risen from the sea and to have never been connected with any other land: the entire insect fauna, therefore, must have arrived by sea, being in the main derived from forms driven by wind from the neighbouring lands. Aldabra is quite uncultivated, and much of it had not been explored before my visit, and therefore transference by human agency can be almost neglected. It is covered with a vegetation derived entirely from Madagascar—a most important fact, as insects arriving from that region will find in many cases their original food plant.

Considering the Seychelles problem first, a glance at a map of the Indian Ocean will show that to the east and north of the archipelago is a chain of coral islands partly bridging the gap between it and India: this bridge must have been of great assistance in the distribution of those Indian and widely occurring forms, which can exist on the limited number of food plants provided by a coral island. To the south-west are the coral islands of the Amirantes, but there are no other "stepping stones" between the Seychelles and Africa. To the south as far as Aldabra are a few small coral rocks, but these are not of a nature to assist largely in the distribution of continental forms.

The winds in the Seychelles region consist of the S.E. Trades from May to September and of the N.W. Monsoon, usually light north-westerly breezes, with occasional squalls, from October to April. Of these two winds the latter are probably the most useful in distribution, as the S.E. Trades, though stronger, cross a large tract of open sea.

Currents cannot be of very great assistance to the larger forms which we are considering, though they may have distributed wood-feeding Tortricids and Tineids (*vide* E. Meyrick on the Tortricina and Tineina of the expedition). The Seychelles

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are well cultivated, and doubtless human agency has accounted for the arrival of such species as *Pyralis manihotalis*.

Turning to the Seychelles species, we find a total of 143 species, to which must be added 111 species of "Micro" and 6 species of "Plume"; of these, in my sections there are 30 peculiar species, while Mr Meyrick finds 90, and Mr Fletcher 3.

Confining myself to my own groups, it is first noticeable that, with the exception of the peculiar species, the various forms are in the main widely distributed, though there is a slight preponderance of African forms. It is not possible to make deductions of value from them, as they are evidently being carried over a large area and can colonise any favourable spot. Even if they belong to a type usually found on continental land it would be rash to deduce that the Seychelles are also continental, as it is quite possible that such species are really being carried daily by the winds to any small islands, but do not as a rule find the continental type of vegetation they require. The peculiar species, however, are of greater value, and it may be said that the majority are very distinct and well separated from their nearest allies; they tend to show that the Seychelles were once much larger, while in many cases they belong to continental groups which do not often cross large areas of sea.

A comparison with the fauna of some island which has undoubtedly never had a continental connection, which is not coralline and which is very isolated, would be interesting, but I know of no island which is convenient for comparison.

The problem of the Aldabra region is more simple than that of Seychelles; there are 66 species, of which 7 are peculiar, and with the exception of the latter all belong to Malagasy or African forms. There are 9 species of micro-lepidoptera, all peculiar, but it is most probable that, when the fauna of Madagascar is better known, Aldabra will be found to contain no species which have not close allies elsewhere.

There is thus a great contrast between the Aldabra region and Seychelles, a contrast which sufficiently speaks for itself.

Further deductions could be made from both the fauna of the Seychelles and that of Aldabra, but in problems of geographical distribution, when arguing from one group of animals, it is unwise to carry conclusions too far, and I next turn to the systematic account of the species, though a word may first be said as to previous collections from the two localities.

Collections were obtained in the Seychelles by M. Joannis* (from M. Philibert), by Dr Holland (from Dr Abbott), while the latter gentleman also described a small collection from Aldabra. Aurivillius recorded the species obtained on Aldabra by Voeltzkow, while Sir G. Hampson described the collections obtained in the Indian Ocean by the "Valhalla." The Lepidopterous fauna of the Seychelles, however, was but little known until H.M.S. "Sealark" visited them in November, 1905. The collection of Lepidoptera then obtained contained 10 new species, as well as numerous additions to the Seychelles list. A full account by T. Bainbrigge Fletcher, R.N., will be found in Trans. Linn. Soc., ser. 2, Zool., vol. xiii. p. 265, 1910.

* Fletcher, Trans. Linn. Soc., ser. 2, Zool., vol. xiii. (1910) p. 322 gives an excellent bibliography with full references.

The present expedition obtained 37 species not previously recorded in the Seychelles, of which 17 are new to science ; 14 species previously recorded were not found*.

On Aldabra some 40 species were added to previous lists, of which 4 are new*.

In conclusion, I must express my indebtedness to Mr Ed. Meyrick for taking over the Tortricina and Tineina and to Sir George Hampson for much kind assistance when consulting the national collection.

Note. Mr H. P. Thomasset has kindly offered to obtain for me a further collection from the Seychelles. I have therefore refrained from describing poor specimens in the expectation of better material. Also Mr R. P. Dupont, who has already been most kind in sending me specimens from Assumption, is again visiting this island and, it is hoped, Astove. Therefore it is proposed to issue a supplement to this paper, bringing the Seychelles lists up to date and adding to those of Aldabra and the neighbouring islands.

Arctiadæ.

1. *Celama squalida* (Staud.).

Nola squalida Staud., Berl. Ent. Zeit., xiv, p. 102 (1870).

Celama squalida Hamps., Cat. Lep. Phal., ii, p. 24.

Ten ♀ apparently referable to this species were obtained on Aldabra ; seven differ from the type in that the antemedial line is more acutely angled and more strongly marked. These specimens may ultimately be found to belong to a distinct species, but in the absence of the ♂ I hesitate to describe them as new.

Aldabra, 10 ♀. Spain, Syria, Madagascar, India, China †.

2. *Celama* sp. ?

A single fragmentary and worn ♀ of this genus was obtained in Silhouette, but its species is quite indeterminable.

3. *Ilema contorta*, n. sp. (Plate **1**, fig. 1, ♂)

♀. Antennæ, with bristles and cilia ; head thorax patagia greyish fuscous ; palpi and sometimes collar darker ; abdomen light fuscous. Fore wing with a large fold extending forwards from below cell near vein 1, the apex of the fold on the underside of wing nearly reaching the subcostal vein ; the colour light fuscous with the costal area to fold more or less suffused with dark purplish fuscous. Hind wing yellow, somewhat suffused with fuscous. *Expanse* 30 mm.

This species must serve as the type of a new section of the genus *Ilema*, near section III. B in the Cat. Lep. Phal., vol. ii, p. 132.

Seychelles : Mahé, Cascade, 800 ft. ; XII. 1908—I. 1909 ; 6 ♂.

4. *Ilema* sp. ?

A further species of *Ilema* remains to be determined. It is probably new, but in the expectation of better material I pass it over for the present.

* Excluding "micros."

† The reference to each species is terminated by a summary of its geographical distribution so far as at present recorded.

5. *Ilema decreta* (Butl.).

Lithosia decreta Butl., Trans. Ent. Soc. London, 1877, p. 351 ; Kirby, Cat. Het. p. 325.

Ilema decreta Hamps., Cat. Lep. Phal., ii, p. 176.

Aldabra, 31 specimens, ♂ and ♀. Borneo, Australia.

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MAHENSIA, nov. gen. (Plate **1**, figs. 2 and 3).

Proboscis fully developed. Palpi slender, upturned, reaching vertex of head. Antennæ in ♂ ciliated. Tibial spurs moderate. Fore wing with the costa evenly arched ; vein 2 from just beyond middle of cell ; 3 and 4 stalked from lower angle of cell ; 5 absent ; 6 and 7 stalked from near upper angle of cell ; 8 and 9 absent or coincident with 10 ; 10 from upper angle ; 11 from after middle of cell approaching closely the distal end of 12. Hind wing with vein 2 from cell at $\frac{3}{4}$; veins 3 and 4, coincident, from lower angle ; vein 5 from middle of discocellulars ; veins 6 and 7 coincident from upper angle ; vein 8 from cell at $\frac{1}{2}$. This genus is perhaps a development of *Siccia* of Section III. (Hampson, Cat. Lep. Phal., ii, p. 392), which it resembles in the structure of the antennæ and palpi. Type *M. seychellarum*.

6. *Mahensia seychellarum*, n. sp. (Plate **1**, fig. 2, ♂ ; fig. 3, neuration of wings).

♂. Head and thorax whitish. Abdomen dark grey ; terminal segment with a small tuft of fuscous hairs. Fore wing white, the costal edge at base grey ; a blackish patch on costa at $\frac{1}{3}$, reaching cell ; another at $\frac{2}{3}$, larger, subtriangular, outwardly curved and reaching vein 4 ; blackish suffusions near apex, near centre of outer margin and on inner margin just before outer angle, the two former not reaching margin of wing ; sometimes a black angular dash near inner angle ; a black spot on discocellulars ; another at point of origin of vein 2 ; a third at base of wing. Underside grey with a patch of reddish scales (androconia) covering distal end of cell. Hind wing grey, with a patch of reddish androconia over distal end of cell. *Expanse* 16 mm.

Seychelles : Silhouette, 1000 ft., IX. 1908, 2 ♂.

7. *Philenora subfusca*, n. sp. (Plate **1**, fig. 4, ♂).

♂. Head, thorax, abdomen and wings dark red brown, with a purple tinge ; antennæ, legs, anal tuft, lighter. Fore wing with a very indistinct dark antemedial line ; a second, postmedial, just beyond discocellulars ; a black somewhat elongate spot in cell and a second, circular in shape, on discocellulars, the intervening area being light fuscous ; sometimes a light fuscous patch between the ante and postmedial lines near inner margin ; an indistinct light area at apex and at outer angle, representing perhaps the edge of a subterminal line ; traces of a series of marginal spots. Hind wing dark fuscous, with a purple tinge. *Expanse* 19 mm.

This species appears to come in Section II. B of the genus (Cat. Lep. Phal., ii, p. 509) and is abundantly distinct from other known species.

Seychelles : Silhouette, 1000 ft. VIII., IX. 1908, 4 ♂.

8. *Utetheisa elata* (Fabr.), ab. *diva* (Mab.) ; Hamps., Cat. Lep. Phal., iii, p. 480.

Seychelles : thirteen specimens from Mahé and Silhouette, 800—1000 ft., all of ab. *diva*. Fletcher obtained two specimens of the type on Mahé.

Assumption, 1 ♀ of type form, R. P. Dupont, 1910. Also Madagascar, Mauritius, Comoros.

9. *Utetheisa pulchella* (Linn.); Hamps., Cat. Lep. Phal., iii, p. 483.

Fletcher obtained this species on St Anne I., but it is apparently unrepresented in the present collection. Two ♀ from Aldabra may be this species, but are more probably *U. pulchelloides*.

Throughout the old world, temperate, subtropical and tropical regions.

10. *Utetheisa pulchelloides* Hamps., Ann. Mag. Nat. Hist., ser. 7, xix, 1907, p. 239.

Seychelles: Silhouette, 2 specimens; Bird I., 8 specimens; a ♀ from Silhouette has the red markings replaced by yellow. Aldabra, 2 specimens. Recorded from Formosa, New Guinea, North Australia, Solomon Islands.

11. *Utetheisa lactea*, subsp. *aldabrensis* Fletcher, Trans. Linn. Soc. London, ser. 2, Zool., vol. xiii, p. 268.

A long series from Aldabra, all of which are more or less strongly marked with red and black; examples from Assumption resemble those from Aldabra. A single specimen from Cosmoledo resembles subsp. *aldabrensis*, except that the fore wings are suffused with light fuscous.

Farquhar. Cosmoledo. Assumption. Aldabra. Providence. Glorioso. Amirantes.

12. *Rhodogastria aldabrensis*, n. sp. (Plate **1**, fig. 5, ♂).

♂. Head and thorax ochreous; palpi ochreous, tinged with crimson above, each joint with a terminal black lateral spot. Antennæ fuscous, basal joint crimson below. Vertex of head with black spot; tegulæ, shoulders, patagia pro- and meta-thorax with paired black spots, which may be obsolete. Legs and abdomen cream coloured, more or less tinged with crimson above. Fore wing light fuscous or ochreous; two black points at base; a large discal semihyaline patch in and below end of cell and in the interspaces beyond it, extending to near outer margin, between veins 2 and 4; a smoky black apical suffusion extending from costa near junction of veins 6 and 7 to the outer margin between veins 3 and 4. Hind wing hyaline, with a narrow cream-coloured border along outer margin. ♀ as ♂, but with less crimson on abdomen and legs. *Expanse:* ♂ 36—42 mm.; ♀ 42 mm.

This species is most nearly allied to *R. astreas* var. *madagascarensis* Bois, from which it may be easily distinguished by the entire absence of a discoidal fascia and by the absence of black spots on the abdomen. It is a smaller and more uniformly ochreous insect.

Aldabra, 1 ♂. Assumption, 2 ♂, 1 ♀.

Noctuidæ.

13. *Chloridea armigera* (Hübn.); Hamps., Cat. Lep. Phal., iv, p. 45.

Assumption, 6 specimens. World-wide.

14. *Chloridea assulta* (Guen.); Hamps., Cat. Lep. Phal., iv, p. 47.

Assumption. Hampson (Ann. Mag. Nat. Hist., ser. 8, vol. i, 1908, p. 481), records this species as being taken by the "Valhalla." All my specimens seem referable to the same species. W. Africa, India, Ceylon, China, Australia.

15. *Euxoa microtica* Hamps., Ann. Mag. Nat. Hist. ser. 8, i, 1908, p. 482.

This species was described from a single ♂ obtained by the "Valhalla." Mr Dupont has obtained a ♂ and ♀ of this species; the latter is in somewhat poor condition, but as it differs in several particulars from the ♂ I append a short general description.

Head, thorax and abdomen greyish fuscous. Fore wing grey, darker (lead-coloured) along the outer margin and from the median vein to the inner margin; a patch of fuscous scales near inner angle below cell; traces of sub-basal, antemedial and postmedial lines, the latter defined by a series of black dots; orbicular grey, outlined with fuscous; reniform outlined with brown and filled with lead-coloured scales, which are continuous with those clothing the space between the cell and inner margin; claviform grey, outlined with black; traces of a submarginal line from just below apex to outer margin at vein 2; cilia fuscous. Hind wing whitish, darker toward apex and along outer margin; cilia whitish. *Expanse:* ♀, 28 mm.

Assumption, 1 ♂, 1 ♀ (Dupont).

16. *Cirphis loreyi* (Dup.); Hamps., Cat. Lep. Phal., v, p. 492.

Aldabra, 1 ♂. Europe, Africa, and Oriental region.

17. *Cirphis leucosticha* Hamps., Cat. Lep. Phal., v, p. 541.

Seychelles: Praslin, 1 ♀ (Fletcher); the present collection contains no representative. British E. Africa, Natal, Mauritius, Madagascar.

18. *Eriopus maillardi* Guen., Maillard's Réunion, Lép., p. 39 (1862).

Seychelles: Mahé, 1 specimen; Round Island, Mahé (Fletcher); Silhouette, 6 specimens from "high jungle, 2000 ft."; Frigate (Fletcher). African and Oriental regions.

19. *Eriopus yerburii* Butl., Proc. Zool. Soc. London, 1884, p. 496.

Eriopus yerburi Hamps., Cat. Lep. Phal., vii, p. 560.

Seychelles; Silhouette, 4 specimens, 1000 ft. Egypt, India, Ceylon.

20. *Spodoptera mauritia* (Boisd.); Hamps., Cat. Lep. Phal., viii, p. 256.

Seychelles: Mahé, Cascade, 800 ft., 2 specimens. African and Oriental regions.

21. *Spodoptera abyssinia* Guen., Noct., i, p. 154 (1852).

Seychelles: Mahé, Cascade, 800 ft., 30 specimens. African and Oriental regions.

22. *Prodenia littoralis* (Boisd.)*.

Hadena littoralis Boisd., Faun. Ent. Madag., p. 91, pl. 13, p. 8 (1833).

Seychelles: Mahé, low country, 2 specimens. African and Oriental regions.

23. *Perigea capensis* (Guen.); Hamps., Cat. Lep. Phal., vii, p. 332, pl. 116, fig. 20.

Seychelles: Mahé (Fletcher; no specimens in present collection). African and Oriental regions.

24. *Chasminia sericea* Hamps., Ill. Het. Brit. Mus., ix, p. 92.

Seychelles: Mahé, 1 specimen (Fletcher). Praslin. Islands of the Indian and Pacific Oceans; Burma.

* [Hampson identifies this species with *Noctua litura* Fabr., Syst., Ent., p. 601. J. S. G.].

25. *Amyna octo* (Guen.); Hamps., Cat. Lep. Phal., x, p. 468.

Seychelles: Mahé; Praslin; Bird; Dennis. Aldabra, 2 specimens. Universal in tropical regions.

26. *Eutelia inextricata* Moore, Lep. Atk., p. 147 (1882).

Seychelles: Mahé (Fletcher; not in present collection). India, Assam, Ceylon, China, Japan.

27. *Stictoptera antemarginata* (Saalm.), Lep. Madag., p. 492 (1884).

An ochreous brown form, with the costa and inner margin dark; orbicular lighter brown; reniform ochreous brown, outlined with darker and preceded by a light spot; apical dash, somewhat suffused with fuscous.

I should have considered my specimens to be a form of the common *S. cucullioides*, but Sir G. Hampson kindly examined them and informed me that they are referable to the above species.

Seychelles: Félicité, 2 ♂. Madagascar.

28. *Stictoptera pœcilosoma* (Saalm.), Lep. Madag., p. 491.

Fletcher recorded this species from Mahé ("in bad condition," 1 specimen); it is not in the present collection.

Seychelles? Madagascar.

29. *Maceda mansueta* Walk., Cat., xiii, p. 1141.

Seychelles: Mahé, low country, 2 ♀. Ceylon, Andamans, Borneo, N. Australia.

30. *Cletthara valida* Walk., Cat. xxvii, p. 101.

Seychelles: Mahé, Cascade, 800 ft., 2 ♀. Ceylon, Borneo.

31. *Homoptera glaucinans* (Guen.), Noct., iii, p. 6.

Aldabra, 1 ♀. African and Oriental regions.

32. *Chalciope hyppasia* (Cram.), Pap. Exot., iii, p. 99, pl. 250 f. E (1779).

Seychelles: Mahé; Silhouette; Praslin; St Anne; Frigate. African and Oriental regions.

33. *Grammodes geometrica* (Fabr.), Syst. Ent., p. 599; Hamps., Moths Ind., ii, p. 531.

Assumption, 1 ♂ (Dupont, 1910). African and Oriental regions.

34. *Grammodes stolida* (Fabr.), Syst. Ent., p. 599; Hamps., Moths Ind., ii, p. 532.

Aldabra, 1 ♂. Assumption, 2 ♂. African region, Madagascar, India, Burma.

35. *Grammodes delta* Boisd., Faun. Ent. Madag., p. 105 (1833).

Aldabra, 1 ♂. Africa (S. and E.), Madagascar, Mauritius.

36. *Remigia undata* (Fabr.), Syst. Ent., p. 600 (1775).

Seychelles; common on the lower land of all the islands. African and Oriental regions.

37. *Remigia repanda* (Fabr.), Ent. Syst., iii (2), p. 49 (1794).

Seychelles; Mahé; Silhouette; Praslin (Fletcher); Félicité. African and oriental regions, Central America.

38. *Ophiusa mercatoria* (Fabr.), Ent. Syst., iii (2), p. 62 (1794).

Aldabra: two specimens obtained at the flowers of *Ceriops candolleana*; they are small in size (expanse 50 mm.) and seem to represent the form *violaceofascia* of Saalmüller. Assumption, 1 ♂. East Africa, Madagascar, India, Ceylon, Java.

39. *Ophiusa algira* (Linn.), Syst. Nat. ed. 12, i, p. 836 (1766); Hamps., Moths Ind., ii, p. 500.

Seychelles: Mahé, 1 ♂, 1 ♀. Aldabra, 3 ♂, 2 ♀; smaller than the type and tinged with fuscous. Old world, tropical and sub-tropical regions.

40. *Ophiusa angularis* (Boisd.), Faun. Ent. Madag., p. 103.

Seychelles: Mahé, 2 ♂. East and South Africa, Madagascar, Mauritius.

41. *Ophiusa tirhaca* (Cram.), Pap. Exot., ii, p. 116, pl. 172, f. E (1777).

Assumption, 1 ♀ (Dupont). Europe (South), Africa, India, China.

42. *Ophiusa melicerta* (Drury), Ill. Exot. Ins., i, 46, t. 23, f. 1; Hamps., Moths Ind., ii, p. 494.

Seychelles: Mahé, 1 ♂ and 1 ♀. Assumption, several specimens (Dupont, 1910). The ♂ from Mahé seems referable to the form (sp. ?) *catella*, while the two ♀ resemble Saalmüller's figure of *Achæa œdipodina* Saalm. (Lep. Madag., T. VIII. fig. 132). African, Oriental and Australasian regions.

43. *Plusia chalcytes* Esper., Schmett. f. 141, f. 3 (1789).

Seychelles: Mahé; Sihouette; Marie Anne; Bird. Aldabra. Tropical regions throughout the world.

44. *Plusia signata* (Fabr.), Ent. Syst., iii (2), p. 81; Hamps., Moths Ind., ii, p. 568.

Seychelles: Mahé; Joannis records this species but no further specimens have been obtained. Africa, Madagascar, India, Ceylon, China, etc.

45. *Plusia limbirena* Guen., Noct., ii, p. 350.

Seychelles; Mahé, 1 ♂. Africa, Madagascar, Mauritius, India.

46. *Œdebasis ovipennis* Hamps., Ann. S. African Mus., ii, p. 352.

Aldabra, 1 ♂; previously only known from a ♂ and ♀ type in Coll. Druce. Africa (Delagoa Bay).

47. *Catephia olivescens* (Guen.), Noct., iii, p. 48.

Seychelles: Mahé, 1 ♀. African, Oriental and Australasian regions.

48. *Fodina aldabrana*, n. sp. (Plate **1**, fig. 6, ♂.)

♂ ♀. Head and thorax chestnut brown; vertex of head and palpi light fuscous; the scales on tegulæ, patagia and mesothorax tipped with yellow. Fore wing vinous brown

with black and grey scales on costa and along inner margin near outer angle; an oblique slightly ex-curved ochreous line from near base to middle of cell; a second ochreous line from point of origin of vein 6 incurved to the middle of vein 2, then sharply angulated, narrower, and incurved to inner margin at two-thirds; the space between these lines suffused with dark brown, forming a transverse fascia extending from inner margin to near subcostal vein; an irregular dark brown suffusion near outer margin from apex to vein 3, followed by faint grey and black marginal lines from below apex to near outer angle; cilia grey irrorated with black. Hind wing greyish fuscous with an irregular white median line; cilia grey. *Expanse* 22 mm.

This species is most nearly allied to the African forms comprising *F. pentagonalis*, and others (especially to an undescribed species in the British Museum from Sierra Leone (Dudgeon)).

Aldabra, 2 ♂, 1 ♀.

49. *Thermesia rubricans* (Boisd.), Faun. Ent. Madag., p. 106.

Seychelles: Mahé; Silhouette; Praslin; St Anne; Frigate (1 ♂ in present collection). Africa, Madagascar, India, N. Australasia.

50. *Hypospila thermesiana* Guen., Maillard's Réunion, Lép., p. 53.

Hypospila bolinoides Guen., Noct., iii., p. 388.

Seychelles: Mahé (?); Félicité, 3 specimens. Also Réunion.

51. *Dragana pansalis* Walk., Cat., xvi, p. 200.

Seychelles: Mahé; Silhouette; Praslin; Félicité, numerous specimens. Africa, India, Ceylon, Andamans, Nicobars, etc.

52. *Tarache malgassica* Mab., Bull. Soc. Ent. Belg., xxv, 1881, p. lx; Saalm., Lep. Madag., p. 330.

Aldabra, 1 ♂. Astove, 1 ♂. Assumption, 1 ♂, 2 ♀. Madagascar.

53. *Tarache rachiastris* Hamps., Ann. Mag. Nat. Hist., ser. 8, i, p. 483.

Aldabra, 4 ♂.

54. *Cosmophila erosa* (Hübn.), Zutr. Samml. Exot. Schmett., ii, p. 19, figs. 287, 288.

Seychelles: Mahé; Silhouette, 5 specimens. Throughout tropical regions.

55. *Eublemma costimacula* Saalm., Lep. Madag., p. 365; Hamps., Cat. Lep. Phal., x, p. 180.

Eublemma plagiopera Hamps., Ann. S. African Mus., ii, p. 420.

Aldabra, 1 ♂. Assumption, 1 ♀. Madagascar.

56. *Oruza rupestre*, n. sp. (Plate **1**, fig. 7, ♂).

♂♀. Head brown; frontal tuft tinged with pink; palpi dark brown. Thorax and patagia clothed with both hair and scales, light ochreous irrorated with black. Abdomen ochreous irrorated with black scales which may form definite dorsal segmental spots and which are always in preponderance on the basal portion of the last segment, giving it a black appearance; anal tuft ochreous. Wings light ochreous, clothed basally with both

hairs and scales; fore wing with oblique waved pinkish antemedial, postmedial and submarginal lines, the first indistinct; a black dot on disc; three on costa towards apex and a series on submarginal line, the first being near apex, the second between veins 5 and 6 and the remainder, variable in number, situate between veins 1 and 3; outer margin and cilia somewhat suffused with pink; a black dentate marginal dot in the interspace between each vein. Hind wing as fore wing except that the antemedial line is even more indistinct and the postmedial line is marked on inner margin by a black dot. *Expanse* 28—30 mm.

Seychelles: Mahé, 1000 ft. ♂ and ♀; Silhouette, 1500 ft., 1 ♂.

57. *Arœopterum minimale*, n. sp.

♀. Head and thorax white; a ring of black scales surrounding eyes. Palpi upturned, slender, hardly reaching vertex; the second and third joints black tipped with yellow; antennæ nearly simple, greyish ochreous: fore legs greyish black; mid and hind legs white; abdomen greyish irrorated with black and yellow posteriorly. Fore wing with ground colour white; a sharply angulated sub-basal line meeting on costa a yellow bordered black dash; trace of a median grey fascia, most distinct on disc and continued on costa as a distinct yellow-edged black dash, which is often double; a black spot in cell on the inner edge of the median fascia; traces of a waved submarginal line; outer margin suffused with smoky black; a marginal series of brown points and from apex to second costal spot a series of brown dashes; cilia grey irrorated with black. Hind wing as fore wing but without costal spots; the median fascia more strongly marked; the terminal suffusion darker and bordered on its inner edge with yellowish fuscous; sometimes some yellowish scales in fascia.

♂. The examples of the ♂ are in rather poor condition: they appear to resemble the ♀ exactly except in being somewhat lighter in colour. *Expanse* 10—11 mm.

This species is closely allied to *A. goniophora* Hamps. and *A. griseata* Hamps. from which it differs in having the ground colour of the fore wing white, the markings more distinct, the costal spots outlined with yellow and in the hind wing the median area of the wing somewhat suffused with ochreous.

Seychelles: Mahé, low country to 1000 ft., 2 ♂, 2 ♀; Félicité, 2 ♂.

58. *Bryophilopsis rœderi* (Standf.).

Bryophila rœderi Standf., Romanoff Mem., vi, p. 665, pl. 25, fig. 4; Staud., Cat. Lep. Pal., p. 167.

Aldabra. 3 worn specimens are perhaps referable to the above species, though they much resemble *Asinchrona nesta* (Fletcher), a species which appears to me to be very closely allied to *B. rœderi*. Armenia, Syria, Mesopotamia.

59. *Earias insulana* Boisd., Faun. Ent. Madag., p. 121, pl. 16, fig. 9.

Seychelles: Bird Island, 1 ♂, 2 ♀, July 1908. This species was probably introduced with the cotton plant (*Gossypium*) which is not uncommon. Throughout Ethiopian and Oriental regions to Siam.

60. *Ophideres materna* (Linn.), Syst. Nat. ed. 10, i, 2, p. 840.

A single specimen flew on board the schooner Charlotte, when some 40 miles S.W. of

Platte Island, with a light wind from the N.W. after 10 days' calm. India, Ceylon, Burma, Andamans, Java.

61. *Magulaba imparata* Walk., Cat., p. xv, 1777 (1858); Hamps., Moths Ind., iii, p. 26.

Magulaba mœstalis Walk., Cat., xxxiv, 1126 (1865).

Seychelles: Mahé, numerous; Praslin; St Anne. Africa, India, Ceylon, Borneo, Korea, Japan.

62. *Simplicia inareolalis*, n. sp. (Plate **1**, fig. 8, neuration of wings).

In markings and general appearance this species exactly resembles *S. inflexalis* Guen. In a series of 18 specimens however there is no trace of an areole and I therefore describe it as new, though it is doubtless a local development of the widely spread *S. inflexalis*.

Seychelles: Mahé; Silhouette.

63. *Nodaria externalis* Guen., Delt. et Pyr., p. 64, 1854.

Aldabra, 4 ♂, 11 ♀. S. Africa, Mauritius, India, Ceylon, Japan.

64. *Hydrillodes perplexalis*, n. sp. (Plate **1**, fig. 9, palpus.)

♂. Head, thorax and palpi dull fuscous brown: fore wing fuscous brown with grey tinge; an indistinct waved sub-basal line; a median black spot in cell; a grey brown waved postmedial line bordered externally by a narrow lighter line. Distal third of wing suffused with dark grey brown; submarginal line represented by a series of lighter dots. Hind wing grey brown; an indistinct semilunar discal dot and medial line.

♀. Marked as in ♂ but the whole insect is suffused with a red brown instead of a grey brown. *Expanse* 28 mm.

Structurally this species falls in Section II.A of Hampson's classification of the genus in "Fauna of British India" but in markings it exactly resembles *H. repugnalis*; on this account a short description only is necessary.

Seychelles, 3 ♂, 6 ♀.

65. *Hydrillodes* sp.?

Two very fragmentary specimens of a *Hydrillodes* were obtained in Aldabra, which are very small (*expanse* 14 mm.) and structurally require a new section near sect. II. A. They are almost certainly new but from the material in my possession it is quite impossible to describe them.

66. *Progonia patronalis* (Walk.), Cat., xix, p. 873.

7 specimens; the discal dash varies from chestnut to black.

Seychelles; Mahé. India and Ceylon to Australia.

67. *Rivula dimorpha*, n. sp. (Plate **1**, fig. 10, ♂.)

♂. Head, palpi, thorax, abdomen, pale ochreous; antennæ darker. Fore wing pale ochreous, more or less irrorated with brown scales which are less prevalent over the basal area; a short brown basal dash on costa reaching cell; a brown antemedial line or fascia from near inner angle to costa near middle, usually interrupted or much narrowed before costa, but always expanded again on costa to form a short brown dash; a black dot at

each angle of cell, and a third near point of origin of vein 2; sometimes a fourth just beyond cell between veins 6 and 7; a dark apical suffusion, continued obliquely to inner margin as a post-medial line by two indistinct parallel brown lines or series of suffusions; four brown dashes on costa near apex; traces of a waved submarginal line; outer margin and cilia ochreous more or less irrorated with brown scales. Hind wing greyish ochreous suffused with grey brown near outer margin and on veins 1 to 4; cilia ochreous, darker near termination of veins.

♀. Differs from ♂ in being wholly suffused with dark fuscous with the exception of the costa which is ochreous interrupted towards apex by brown dashes and also by the antemedial line and basal dash. Hind wing lead-coloured; cilia ochreous, interrupted by fuscous bars near termination of veins. *Expanse*, 18 mm.

The mid-tibia in both sexes is somewhat expanded and both mid- and hind-tibiæ are moderately hairy, the feature being most marked in the ♂. The species is quite distinct and comes perhaps in Hampson's Sect. III of the genus (Fauna of Brit. Ind., Moths, vol. ii, p. 335).

Seychelles: Mahé, 1000 ft.; Silhouette 1500 ft.; 10 ♂, 1 ♀.

68. *Chusaris oculalis* (Moore), Proc. Zool. Soc. London, 1877, p. 614.

Seychelles: Mahé; Silhouette; 3 worn specimens probably this species. W. Africa (Accra), Assam, Andamans.

69. *Chusaris novatusalis* (Walk.), Cat., xix, p. 854.

Seychelles; Silhouette, 1000 ft. I refer two specimens not in the best of condition to this species, though they differ from the specimens in the British Museum in being more strongly marked. Ceylon.

70. *Chusaris nigerrimalis*, n. sp. (Plate **1**, fig. 11, ♂).

♂. Antennæ annulated, with fascicles of cilia. Palpi with second joint porrect, the third being somewhat upturned and over two-thirds the length of second; colour uniform smoky black; fore wing with a black discal dot; traces of an oblique lighter line passing from costa through discal dot to inner margin; traces of a lighter submarginal line.

♀ with antennæ nearly simple; fore wing with markings somewhat more distinct, the submarginal line being distinctly angulated opposite discal dot; cilia with lighter bars opposite terminations of veins. (*Expanse* 12—14 mm.)

This species is abundantly distinct and comes in Hampson's Sect. I. of the genus in Fauna of British India, Moths, vol. iii.

Seychelles; Mahé (Morne Blanc; Cascade, 1000 ft.: Morne Pilot 2000 ft.), 14 ♂, 1 ♀.

71. *Hypena masurialis* Guen., Delt. et Pyr., p. 38.

Seychelles: Silhouette, 1000 ft., 10 specimens; Praslin; Frigate. African, Oriental, Australasian regions.

72. *Hypena varialis* Walk., Cat., xxxiv, p. 1136.

Seychelles: Silhouette (3 specimens). Natal, Madagascar, Ceylon.

73. *Ophiuche conscitalis* (Walk.), Cat., xxxiv, p. 1509.

Seychelles: Mahé; Silhouette: Praslin: Frigate; common. African, Oriental, Australasian regions.

74. *Arrade erebusalis* Walk., Cat., xxvii, p. 82.

Seychelles: Silhouette, 1000 ft., 2 ♀. Ceylon.

75. *Arrade massalis* Swinh.. Proc. Zool. Soc. London, 1885, p. 866.

Seychelles: Silhouette, 1000 ft., ♂, ♀. India (Bombay).

76. *Hyblæa puera* (Cram.), Pap. Exot., ii, p. 10; Hamps., Moths Ind., ii, p. 371.

Seychelles; Mahé, 2 ♀; Praslin. African, Oriental, Australasian regions.

77. *Hyblæa xanthia* Hamps., Proc. Zool. Soc. London, 1910, p. 453, pl. 38, fig. 26.

Aldabra 3 ♀. Two of the specimens resemble the type from Africa; the third differs from them in having a great reduction of the black irroration of the fore wing, while the hind wing has a black discal dot in place of the black suffusion, and the black marginal border is reduced to a few black specks. Previously known from South Africa.

Lymantridæ.

78. *Porthesia pectinata*, n. sp. (Plate **1**, fig. 12, ♂.)

♂. Head, thorax and abdomen creamy white. Antennæ long (10 mm.) and strongly pectinated; the branches brown and the shaft thinly covered with white scales. Wings white; fore wing with the costa moderately arched; outer margin slightly curved.

♀. Antennæ shorter than in ♂, less strongly pectinated. Colour as in ♂. Fore wing with the costa highly arched and outer margin more curved than in ♂. Anal tuft apparently greyish. *Expanse* ♂ 40 mm., ♀ 49 mm.

The specimens are not in the best of condition but the species is abundantly distinct, and I have no hesitation in describing it.

Seychelles; Silhouette, high jungle, 2000 ft., 2 ♂, 1 ♀.

Hypsidæ.

79. *Hypsa subretracta* Walk., Cat., vii, p. 1676.

Seychelles; Mahé (Joannis, 1 ♀). No specimen has been obtained since Joannis recorded it, and the species is probably not resident. Also in Africa.

80. *Deilemera seychellensis* Hamps., Ann. Mag. Nat. Hist., ser. 8, i, 1908, p. 485.

Seychelles; Mahé; Silhouette, 1000 ft., 7 ♂, 14 ♀.

81 *Argina astræa* (Drury), Ill. Exot. Ins., ii, p. 11, pl. 6, fig. 3.

1 ♂ and 1 ♀ approach the form *pardalina* in having the spots ringed with greyish white; the remainder are all the form *pylotis*.

Seychelles: Mahé; Silhouette; low country to 1000 ft., 2 ♂, 8 ♀. Madagascar, Mauritius, Réunion, India, Australasian region.

Sphingidæ.

82. *Herse convolvuli* (Linn.); Roths. and Jord., Revis. Sphing., p. 11 (1903).

Seychelles: Mahé (Port Victoria); Silhouette, 1 ♂, 1 ♀. European, African, Oriental, Australasian regions.

83. *Acherontia atropos* (Linn.); Roths. and Jord., Revis. Sphing., p. 18.

Seychelles; Mahé. 14 specimens. Europe, Africa, Madagascar.

84. *Cephonodes hylas* (Linn.); Roths. and Jord., Revis. Sphing., p. 467.

Seychelles: Mahé; Silhouette; 9 specimens. Aldabra; Assumption; 3 specimens. Africa (South of Sahara), Madagascar, islands of Indian Ocean.

85. *Deilephila nerii* (Linn.); Roths. and Jord., Revis. Sphing., p. 507.

Seychelles; Mahé, 2 specimens. Europe, Africa, Madagascar, India, Ceylon.

86. *Macroglossum alluaudi* (Joann.); Roths. and Jord., Revis. Sphing., p. 628.

Macroglossa alluaudi Joann., Bull. Soc. Ent. France, 1893, p. 52.

Seychelles: Mahé. No specimens obtained since the species was described. Now perhaps extinct or possibly never resident.

87. *Nephele hespera* (Fabr.), Syst Ent., p. 546; Hamps., Moths Ind., i, p. 108.

Seychelles; Silhouette; 1 example of a uniform smoky brown form with two white discal dots. India, Ceylon, Australia.

88. *Temnora fumosa*, subsp. *peckoveri* (Butl.), Trans. Zool. Soc. London, 1877, p. 637.

Temnora fumosa peckoveri Roths. and Jord., Revis. Sphing., p. 574.

Seychelles; Mahé; Silhouette; 2 worn examples. Madagascar, Comoro Islands.

89. *Hippotion osiris* (Dalm.); Roths. and Jord., Revis. Sphing., p. 750.

Seychelles; Mahé, 3 specimens. Spain, Africa, Madagascar.

90. *Hippotion aurora* Roths. and Jord., Revis. Sphing., p. 812.

Assumption; a single example. Diego Suarez. Madagascar.

91. *Hippotion eson* (Cram.); Roths. and Jord., Revis. Sphing., p. 754.

Seychelles; Silhouette; 2 examples bred from larvæ found in jungle at about 2000 ft. Africa, Madagascar. Mauritius.

Geometridæ.

92. *Scardamia* (?) *percitraria*, n. sp. (Plate **1**, fig. 13, ♂.)

♂. Head, thorax and abdomen orange yellow; antennæ pectinated, grey. Fore wing orange yellow, sometimes irrorated with rufous as in *S. metallaria*; an ex-curved antemedial line from costa at one-third to inner margin at one-half; a postmedial line from costa at three-quarters to inner margin, excurved to vein 6, then parallel to outer margin; both ante and postmedial lines, costa, and also a narrow marginal series of specks with metallic silver reflection; cilia orange yellow. Hind wing as fore wing but with antemedial line very indistinct and postmedial line uniformly and slightly ex-curved.

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♀ differs from the ♂ in being suffused with rufous and is consequently darker in colour. *Expanse* 19—20 mm.

Aldabra, 5 ♂, 2 ♀.

93. *Petrodava leucicolor* (Butl.), Ann. Mag. Nat. Hist., ser. 4, xvi, 1875, p. 417.

Seychelles: Mahé and St Anne (Fletcher); not in present collection. Madagascar and Africa.

94. *Iodis stibolepida* (Butl.), Cist. Ent., ii, p. 394; Swinh., Trans. Ent. Soc., 1904, p. 547.

Assumption, 1 example. Aldabra, 4 examples. Farquhar (Fletcher). Madagascar, Cape Colony.

95. *Comostola læsaria* (Walk.), Cat., xxii, p. 544.

Seychelles; Mahé; Silhouette; 6 specimens. India, Ceylon, Australia, Japan.

96. *Comostolopsis simplex* Warren, Nov. Zool., ix, p. 494.

Aldabra, 4 specimens, which, though very small, probably are local forms of the above species. Also East Africa.

97. *Craspedia minorata* (Boisd.), Faun. Ent. Madag. p. 115.

Acidalia consentanea Walk., Cat., xxii, p. 745.

Craspedia actuaria Hamps., Moths Ind., iii, p. 432.

Seychelles: Mahé; Silhouette; Bird; Dennis; Praslin; Frigate. Aldabra. Numerous specimens from all localities. African and Oriental regions.

98. *Gymnoscelis tenera* Warren, Nov. Zool., viii, p. 209.

Seychelles: Mahé; Silhouette; Félicité; 4 specimens.

Described from Ogrugu, Lower Niger River.

99. *Chloroclystis metallicata* Fletcher, Trans. Linn. Soc. London, ser. 2, Zool., xiii, 1910, p. 287.

Seychelles; Mahé, 2 specimens.

100. *Chloroclystis* sp.?

Two further members of this genus were obtained, one in Seychelles and one in Aldabra, the former being identical with Fletcher's undescribed species from Praslin (Trans. Linn. Soc., ser. 2, Zool., vol. xiii, p. 287). Their condition is not such as to make description advisable.

101. *Ozolla inexcisata*, n. sp. (Plate **1**, fig. 14, ♂.)

♂. Head, thorax and abdomen pale ochreous brown. Fore wing with the costa straight almost to apex which is slightly produced; outer margin hardly excised below apex; in colour light ochreous brown irrorated with black; an oblique brown antemedial line strongly marked on costa, afterwards indistinct; parallel oblique postmedial lines from just before apex to inner margin at three-quarters; a black discal dot and a brown dash on costa at two-thirds; a further brown costal dash near apex and a submarginal

line represented by a series of brown dashes; a series of marginal black points between the termination of veins; cilia ochreous. Hind wing with outer margin somewhat produced at vein 6; in colouration as fore wing but the postmedial line is situate nearer the centre of wing and is more strongly marked; the submarginal series of dashes is also accentuated and grey in colour; the antemedial line is absent. *Expanse* 28 mm.

This species may be distinguished from its allies by the outer margin of the fore wing being hardly excised below the apex.

Seychelles; Silhouette, 1000 ft., 1 ♂.

Epiplemidæ.

102. *Epiplema moza* Butl., Ann. Mag. Nat. Hist., ser. 5, i, 1878, p. 402.

Seychelles; Silhouette, 1 specimen in bad condition. Japan, India.

103. *Dirades theclata* (Guen.), Uran. et Phal., ii, p. 36; Hamps., Moths Ind., iii, p. 132.

Seychelles; Mahé, Long Island; Silhouette, 1000 ft.; 4 specimens. West Africa, India, Ceylon, Burma.

Nymphelidæ.

104. *Danais chrysippus* (Linn.); Boisd., Faun. Ent. Madag., p. 35.

Seychelles: Mahé; Silhouette; numerous specimens, all typical. Aldabra; abundant, most specimens showing white scales on the veins of the hind wing. Old World, tropical and sub-tropical regions.

105. *Euplœa mitra* Moore, Cat. Lep. Mus. E. I. Co., i, p. 127.

Seychelles: Mahé, 11 specimens; Silhouette, 10 specimens. Fletcher records a preponderance of the ♂ sex, but this is not confirmed in the present collection, the sexes being nearly even (♂ 11, ♀ 10). Previously this species was only known from Mahé; Holland indeed records it from Aldabra but I have little doubt the latter record is due to a confusion of localities. The species is a denizen of the ancient Seychelles jungle and is extremely conspicuous; Aldabra is quite unsuited to it while in addition I cannot conceive it possible that I should overlook it in five months' collecting, covering both wet and dry seasons.

106. *Melanitis leda* (Drury), Ill. Exot. Ins., i, pl. 15, ff. 5 and 6.

Seychelles: Mahé, 9 specimens; Silhouette, 17 specimens. Assumption (Dupont), 1 tattered specimen, probably a migrant.

All the Mahé specimens are of the wet season (ocellate) form, the Silhouette examples being the dry season form. Voeltzkow records this species from Aldabra but it can hardly be resident there as I did not see a single example. Voeltzkow's specimen may have been a wind-driven example from Madagascar. Africa, India, Australia.

107. *Pyrameis cardui* (Linn.); Saalm., Lep. Madag., p. 77.

Seychelles: no specimen in the present collection but the species is recorded from Mahé by Mr H. P. Thomasset and from St Anne by Mr J. A. de Gaye, records in which

I have entire confidence. Aldabra; one specimen was seen on Picard Island in January; it appeared after a squall from the south-west and after resting for ten minutes went away again to the north-west. Assumption, 1 specimen (Dupont, 1910). Worldwide (except Arctic, Antarctic regions and New Zealand).

108. *Precis orithyia*, var. *madagascarensis* (Guen.), Vinson's Voy. Madag., Annexe F (Lep.), p. 37 (1865).

Aldabra, 2 specimens, November, dry season form, January, wet season form. Cosmoledo, 2 specimens, September, wet season forms: this is somewhat curious as September is the dryest month of the dry season. Assumption, 1 specimen (Dupont). Madagascar Oriental region (type).

109. *Precis clelia* (Cram.), Pap. Exot., i, p. 33, t. 21.

Aldabra, 6 specimens, 5 of the dry season form in November, 2 wet season in January. Assumption, 1 specimen, dry season form. Astove, 1 specimen, dry season form. Madagascar, South and East Africa.

110. *Precis rhadama* (Boisd.), Faun. Ent. Madag., p. 44.

Astove, 4 specimens of the dry season form: the species was not uncommon near the lagoon shores. Madagascar, Mauritius.

111. *Hypolimnas misippus* (Linn.); Saalm., Lep. Madag., p. 82.

Seychelles: Mahé, St Anne (Fletcher); no specimens in present collection. Aldabra, a few examples, all ♂: ♂ were not uncommon in January just before I left: the ♀ seem to appear later, for Mr Thomasset obtained several, March 1908. Found throughout tropical regions.

112. *Atella phalantha* (Drury), Ill. Exot. Ins., i, pl. 21, 1, 2; Saalm., Lep. Madag., p. 77.

Aldabra, numerous specimens. Also known from Tropical and South Africa, Madagascar, Mascarenes, India, Ceylon, Burma, Siam, China, Japan, Malay sub-region.

113. *Atella philiberti* Joann., Bull. Soc. Ent. France, 1893, p. 51.

Seychelles: Mahé; Silhouette; Praslin; numerous specimens, 800—2000 ft. (I doubt the records for Aldabra and Glorioso Island: they perhaps refer to the previous species).

Papilionidæ.

114. *Papilio disparilis* Boisd., var. *nana* Oberth., Études d'Entomologie, iv, p. 54.

Seychelles? Not in present collection and no record for many years; it is certainly not resident now. I expect the record, from which the variety was described, was made from a wind-blown specimen or its offspring. An inhabitant of Réunion.

Pieridæ.

115. *Catopsilia florella* (Fabr.), Syst. Ent. p. 479; Joann., Ann. Soc. Ent. France, 1894, p. 409.

Seychelles: Mahé, recorded by Joannis. It is at present unknown in the archipelago and was recorded perhaps from a wind-blown specimen.

116. *Teracolus pernotatus* Butl., Proc. Zool. Soc. London, 1876, p. 159, pl. 7, fig. 1.

Aldabra, abundant. Astove, noticed but specimens not obtained. Africa, Madagascar (?)

117. *Teracolus evanthides* (Holl.), Proc. U. S. Nat. Mus., xviii, p. 268.

Aldabra; numerous but less so than the preceding species. Madagascar (?)

118. *Teracolus aldabrensis* (Holl.), Proc. U. S. Nat. Mus., xviii, p. 269.

The determination of this species was confirmed by Dr F. A. Dixey.

Aldabra. Assumption. Astove. The species was common on each island.

119. *Terias brigitta* (Cram.); Trim., S. Afr. Butt., iii, p. 14.

Aldabra: extremely common, both wet (after November) and dry season forms. Madagascar, East and South Africa.

120. *Terias floricola* (Boisd.), Faun. Ent. Madag., p. 21.

Terias boisduvalliana Mab., Hist. Mad. Lep., i, p. 253.

Aldabra. A second *Terias* occurred on Aldabra but somewhat rarely: Voeltzkow records this species as *T. desjardinsi* (Boisd., *op. cit.*, p. 22) but a comparison with the specimens of the latter species in the National collection induces me to refer my specimens to *floricola* Boisd.

Lycænidæ.

121. *Zizera maha* (Kollar); Bingh., Butt. Ind., ii, p. 355.

Seychelles, Mahé. No specimens in present collection; the evidence Fletcher gives (Tr. Linn. Soc. ser. 2, Zool., vol. xiii, 1910, p. 293) seems hardly sufficient to cause the inclusion of the species in the Seychelles list. Known from India and Burma.

122. *Zizera lysimon* (Hübn.); Bingh., Butt. Ind., ii, p. 357.

Seychelles: Mahé; Silhouette; Praslin; Bird and Dennis Islands; numerous specimens, chiefly from low country to 800 ft. Aldabra; uncommon, chiefly near the wells at Takamaka. South Europe, Africa, Madagascar, India, etc.

[123. *Zizera gaika* (Trim.), Trans. Ent. Soc. London, 1862, p. 403.

Seychelles. Recorded by Holland, probably in error for *Z. lysimon*. Africa, India, Burma, etc.]

124. *Zizera* (?) *malathana* (Boisd.), Faun. Ent. Madag., p. 26.

Both Voeltzkow and Holland record this species from Aldabra: I have two specimens which may belong to *malathana* but are too rubbed to ascertain definitely. Madagascar.

125. *Polyommatus boeticus* (Linn.); Bingh., Butt. Ind., ii, p. 432.

Seychelles: Mahé, low country, abundant. S. Europe, S. Asia, Africa, Madagascar, Mauritius.

126. *Hypolycæna philippus* (Fabr.), Ent. Syst., iii (1), p. 283; Trim., S. Afr. Butt., ii, p. 118.

Aldabra; several specimens, December, January. Africa, Madagascar.

127. *Syntarucus telicanus* (Lang), Verz. Sein. Schmett., ii, p. 47.

Seychelles, Mahé, numerous in the low country. Aldabra; four worn specimens. S. Europe, S. Asia, Africa, Madagascar, Mascarenes.

Hesperidæ.

128. *Eagris sabadius* (Gray), Griffith's "Animal Kingdom," xv, p. 594; Guen., Maillard's Réunion, Lép., p. 19.

Seychelles: Mahé, 7 specimens; Silhouette, 11 specimens; all from jungle above 800 ft. Madagascar, Mauritius, Réunion.

129. *Eagris sabadius* var. *aldabranus*, n. var. (Plate **1**, fig. 15, ♂).

I give this name to a small insect (*expanse* 30 mm.) which appears to be a local dwarf form of *E. sabadius*. It differs also in being lighter in colour; the markings less distinct; the underside of the antennæ lighter. I saw a large number of specimens in the *Pemphis* bush and all were of the small size mentioned above.

Aldabra, 5 ♂, 1 ♀.

130. *Parnara borbonica* (Boisd.), Faun. Ent. Madag., p. 65; Holl., Proc. Zool. Soc. London, 1886, p. 62.

Seychelles: Mahé; Silhouette; Praslin (Fletcher). S. Africa, Mascarenes, Madagascar.

131. *Parnara morella* (Joann.), Bull. Soc. Ent. France, 1893, p. 52.

Seychelles: Mahé; Silhouette (Fletcher).

132. *Parnara gemella* (Mab.), Bull. Soc. Ent. Belg., 1884, p. 187; Holl., Proc. Zool. Soc. London, 1896, p. 62.

Seychelles: Mahé; Silhouette; Praslin. Madagascar.

133. *Rhopalocampta arbogastes* (Guen.), Maillard's Réunion, Lép., p. 19; Holl., Proc. Zool. Soc. London, 1896, p. 99.

Seychelles: Mahé. Fletcher captured a single specimen. Not in the present collection and probably not resident. Madagascar, Réunion.

Thyrididæ.

134. *Hypolamprus obscuralis* Hamps., Moths Ind., i, p. 365.

Aldabra, 11 specimens. India (Sikkim).

135. *Rhodoneura tibiale*, n. sp. (Plate **1**, fig. 16, ♂.)

♂. Head, thorax and abdomen purple brown, palpi lighter. Wings purple brown, lineally striated with dark brown, the striæ being numerous, fine and somewhat indistinct. Fore wing with a hyaline spot below cell between veins 2 and 3; underneath it between veins 1 and 2 are 2 yellow spots, followed beneath by a second hyaline spot; cilia purple brown, on hind wing tipped with pink. Underside lighter than upper side, tinged with

pink, the striæ being more distinct; on outer margin beneath apex is a small semi-circular dark suffusion with one or more yellow dots; just beyond discocellulars is a narrow yellow bar, extending from vein 8 to vein 5, bordered with brown and divided medially by a brown stria; the hyaline and yellow spots more prominent than on upper side. Legs brown, tinged with pink, the hind tibiæ being much swollen and fringed on the inner side by a fan of long hair. *Expanse* 29—31 mm.

Superficially this species resembles a dark *R. myrtæa*, but it is readily distinguished by the swollen hind tibiæ of the ♂.

Seychelles: Silhouette, 1000 ft., 1 ♂; Marie Anne Island, 1 ♂.

136. *Rhodoneura apicale*, n. sp. (Plate **1**, fig. 17, ♂.)

Head, thorax and abdomen fuscous brown. Palpi with second joint obliquely upturned, third joint porrect; in colour fuscous irrorated with brown scales. Front pair of legs coloured as palpi, mid and hind pair darker; hind tibiæ somewhat laterally flattened, with a tuft of hair arising from near articulation with femora, and a second tuft, black and conspicuous, near apex. Fore wing with costa straight to near apex, then moderately arched, the apex being markedly produced; fuscous brown in colour, lighter towards margin, with numerous fine brown striations; a white spot, bordered with dark brown, below cell, and a second spot, indistinct, below it and slightly nearer base of wing; a few black spots on costa, most distinct towards apex; also one or two near the white spot; a series of brown points along outer margin; cilia fuscous brown tinged with pink. Hind wing coloured as fore wing but without white spot; scattered brown points near inner margin and from base of wing to apex. Underside lighter than upper but similarly coloured; a narrow dark brown sub-apical patch; a curved dash beyond discocellulars; the white spot very distinct. *Expanse* 26 mm.

This species may be easily distinguished by the production of the apex, a feature which is quite conspicuous.

Seychelles: Silhouette, 1000 ft., 1 ♂.

137. *Rhodoneura aldabrana*, n. sp. (Plate **1**, fig. 18, ♀.)

♂. Head, thorax, abdomen, legs and palpi light fuscous brown; palpi obliquely upturned, second joint hardly reaching beyond frons; third joint small. Fore wing light fuscous brown, tinged with rufous and uniformly striated with darker brown, the striæ being somewhat waved; costa tinged with pink and interrupted by numerous black points, of which two just before apex are comparatively large and conspicuous; cilia fuscous brown. Hind wing as fore wing but to a larger extent irrorated with rufous scales; the outer margin defined by a pink linear border which is slightly extended near outer angle; cilia light fuscous, banded with darker fuscous and tipped with pink.

♀ differs from the ♂ in that the wings are wholly suffused with brick red, the striæ on the fore wing being greyish fuscous and on the hind wing rufous; the red border to the hind wing extends to the fore wing also. Tergum of last abdominal segment clothed with black and white scales; anal tuft pink tipped with yellow.

Underside in both sexes light fuscous striated with rufous and brown; a semi-circular fuscous subapical patch and traces of a brown suffusion on discocellulars. *Expanse*: ♂ 15 mm.; ♀ 18 mm.

This species appears to be allied to *Siculodes minutula* (Saalmüller, Lep. Madag., p. 216), but is quite distinct.

Aldabra, 2 ♂, 4 ♀.

Pyralidæ.

138. *Mucialla* (?) *rufivena* (Walk.), Cat., xxx, p. 960.

Aldabra; 1 ♀ in bad condition, probably this species. Ceylon, Borneo, New Guinea.

139. *Culladia admigratella* (Walk.), Cat., xxvii, p. 192; Hamps., Moths Ind., iv, p. 11.

Seychelles: Mahé; Silhouette, 16 specimens; Praslin (Valhalla). Africa, India, Ceylon, Mauritius, Sumatra, Philippines.

140. *Crambus seychellellus* Fletcher, Trans. Linn. Soc. London, ser. 2, Zool., xiii, 1910, p. 297.

Seychelles; Mahé; Silhouette; 21 specimens, coast to 1500 ft. This species shows little variation; a medial fascia may be well marked or absent, while the intensity of colouration varies slightly; otherwise this series produces nothing to add to Fletcher's description.

141. *Crambus auronivellus*, n. sp. (Plate **1**, fig. 19, ♂.)

♂. Head and thorax white. Antennæ simple, fuscous. Palpi rather short, second joint porrect, third obliquely downturned; both second and third joints white above, yellow underneath. Legs white, tarsi yellowish. Fore wing glistening white, costa sometimes tinged with yellow; a yellow striga, sometimes obsolete, from costa at two-thirds to cell; a sub-marginal line oblique from costa to vein 5, then obtusely angulated and obsolescent; a second oblique striga, parallel to the sub-marginal line and nearer apex, reaching vein 5; apex either filled in by a small triangular yellow patch or crossed by a third parallel oblique striga; on outer margin between veins 2 and 3 is a short black wedge-shaped dash internally edged with yellow and extending on to cilia as a dark æneous patch; cilia white, with a golden metallic reflection distally; striæ and sub-marginal line also with a metallic lustre. Hind wing shining white. *Expanse* 13—16 mm.

Seychelles: Mahé; Silhouette; low country to highest jungle, 7 ♂.

142. *Crambus* ? sp. ?

Two ♂ of a species of crambite almost certainly new were obtained on Aldabra, but, as their condition is poor and I have hopes of better material from the locality, I consider it inadvisable to name the species. For convenience of those working on species of the Madagascar region the following particulars may be given:—palpi with second joint porrect, third obliquely down-turned; antennæ minutely ciliated. Fore wing very light ochreous or cream-coloured; a brown discal dot; a uniformly curved sub-marginal line; margin narrowly brown; cilia concolorous with ground-colour of wing. Hind wing white with a slight fuscous tinge. *Expanse* 16 mm.

143. *Diptychophora muscella*, n. sp. (Plate **1**, fig. 20, ♂.)

♂. Head, thorax, palpi white tinged with fulvous; abdomen white, each segment basally with some yellow scales; the posterior segments dark laterally. Fore wing white, much suffused with brown and fulvous; a fulvous costal streak; a brown nearly straight antemedial line, bordered internally with white and fulvous; an indistinct discal spot which is surrounded by an irregular fulvous area continuous with the costal streak; an indistinct double postmedial line which is curved from costa to near discocellulars and then passes very obliquely to inner margin at two-thirds; the apical area yellow, with an irregular white spot; occasionally two black marginal spots near veins 2 and 3; cilia somewhat variable; usually blackish at base, then white and distally smoky; cilia round sub-apical excision white. Hind wing white, much suffused with grey towards outer margin; traces of a curved postmedial line; cilia grey with a darker band near base. *Expanse* 8 mm.

♀ as ♂ but without the slight thickening of antennæ. This species comes nearest to *D. minutalis* Hampson, but may be distinguished by the great obliquity of the postmedial line which forms a smaller angle with the inner margin and approaches more nearly the antemedial line.

Seychelles: Mahé, 800 ft., 2 ♂; Silhouette, 1000—1500 ft., 15 ♂, 7 ♀.

144. *Cirrochrista perbrunnealis* Fletcher, Trans. Linn. Soc. London, ser. 2, Zool., xiii, 1910, p. 297.

Two ♀, which only differ from the ♂ type in being larger (32 mm.).

Seychelles: Mahé, Cascade, 800 ft., 2 ♀; St Anne, 1 ♂.

145. *Ephestia cautella* (Walk.), Cat., xxvii, p. 73; Hamps., Moths Ind., iv, p. 66.

Seychelles (Joannis). Two very worn specimens (♀), probably of this genus and species were obtained in Mahé. Tropical and sub-tropical regions.

146. *Heterographis insularella* Rag., Bull. Soc. Ent. France, 1893, p. 295.

Seychelles: no specimens in present collection: received from Mahé by Joannis.

147. *Euzophera scabrella* Rag., Nouv. gen. p. 32; Rag., Romanoff Mem. viii. (1901), p. 63, pl. XLIV. fig. 5.

Aldabra, 8 specimens. Africa (Accra).

148. *Nephopteryx*, n. sp.

Aldabra 1 ♀. A specimen of a new species near *emussitatalla* Rag., but more material is required for description.

149. *Epicrocis*, n. sp.?

Aldabra (several specimens). Better material is required for description.

150. *Phycita* (sub-genus?) *pectinicornella*, n. sp.

Palpi with the second joint not hollowed out to receive maxillary palpi, which carry a brush of long hairs; antennæ with first joint slightly thickened; shaft for three-quarters

of length with each joint carrying a bunch of cilia on the upper surface and a single ciliated branch on the lower. Head and thorax grey. Fore wing grey with much fuscous irroration; a brownish medial line from middle of costa, waved to middle of vein 1. c, then acutely angled and bent outwards to inner margin; a brown dot at lower angle of cell; sometimes a second near upper angle; a sub-marginal line brown bordered with white externally, incurved opposite cell, then straight to beyond vein 2, afterwards obtusely angled and bent outwards to inner margin; outer margin with indistinct brown points; cilia grey. Hind wing greyish fuscous, semi-hyaline.

♀ differs from ♂ in having the antennæ simple, the palpi more slender and the third joint longer. *Expanse* 32 mm.

Seychelles: Mahé, 800—1000 ft., 1 ♂; 1 ♀; Silhouette, 1500 ft., 2 ♀.

151. *Cryptoblabes* sp.? near *plagioleuca* Turner, Proc. Roy. Soc. Queensland, xviii, 1904, p. 150.

Seychelles; Mahé (800 ft.), 3 specimens (♀), worn.

152. *Etiella zinckenella* (Treits.), Schmett. Eur., ix, i, p. 201; Hamps., Moths Ind., iv, p. 108.

Seychelles: Mahé, 2 specimens. Aldabra, 1 specimen. Tropical and sub-tropical regions.

Note. The Phycitid material from the Seychelles is in too poor condition to be dealt with satisfactorily: in the expectation of more material therefore I have made no attempt to describe fresh species from bad types, a proceeding which would only lead to confusion.

153. *Endotricha vinolentalis* Rag., Ann. Soc. Ent. France, 1890, p. 525.

Aldabra, 17 ♀. Seychelles: Mahé and St Anne. West Africa, Mayotte (Comoros).

154. *Endotricha mesenterialis* (Walk.), Cat., xvii, p. 285; Hamps., Moths Ind, iv, p. 133.

Recorded by Joannis from Seychelles; probably owing to confusion with the next species. India, Burma, Formosa.

155. *Endotricha flavofascialis*, n. sp. (Plate **1**, fig. 21, ♂.)

♂. Head, thorax and palpi purplish fuscous, the latter with some yellow scales in centre; antennæ ciliated with a recurved spine on basal joint. Abdomen purple with a slight yellow crest on basal segments. Fore wing dark purple red or purple black; a broad yellow (sometimes whitish) central fascia with a breadth of nearly half length of cell, the inner edge waved, ex-curved, distinct, the outer edge somewhat incurved and indistinct; a faint waved sub-marginal line; 5 yellow points on costa from sub-marginal line to fascia; cilia yellow with a purple line at base and suffusion near centre.

Hind wing dark purple with a broad whitish central fascia, broadest on disc (one-third length of wing), narrower towards inner margin; the edges of the fascia distinct, waved; cilia yellow with a purple line along margin of wing.

♀ closely resembles the ♀ of *E. mesenterialis* but has the markings more obsolete. Wings with the colour from fuscous to dull brick-red, not so rufous as in *E. mesenterialis*. Fore wing with traces of an antemedial line corresponding to the inner edge of the fascia

in the ♂; a faint discal dot; a faint waved sub-marginal line; a series of purple points on outer margin; cilia basally purple, distally yellow. Hind wing darker than fore wing; traces of a lighter central fascia; a series of purple marginal points; cilia as in fore wing. *Expanse*: ♂ 20 mm.; ♀ 18 mm.

This species was first discovered by Fletcher who refrained from describing it on account of the poor condition of his specimens. It is closely related to *E. mesenterialis* but differs constantly in the ♂ sex, (1) by being darker in colour than the darkest variety of *mesenterialis*, (2) in the width of the fascia on the fore and hind wing. The ♀ of the two species resemble each other closely but the ♀ flavo-fascialis is to be distinguished by its duller and more fuscous colour and by the indistinctness of the markings.

Seychelles; Mahé; Silhouette, 800—1000 ft., 9 ♂, 15 ♀.

156. *Pyralis manihotalis* Guen., Delt. et Pyr., p. 121.

Seychelles; Mahé, up to 800 ft., 8 specimens (2 dwarfs, half normal size). Aldabra, 12 specimens. Neo-tropical, African (?), Oriental and Australian regions.

157. *Pyralis farinalis* (Linn.); Staud., Cat. Lep. Pal., ii, p. 45.

Seychelles; Praslin (Valhalla). Not found in present collection.

158. *Hypsopygia mauritialis* (Boisd.), Faun. Ent. Madag., Lep., p. 119.

Seychelles: Mahé; Silhouette; Bird; 10 specimens, 2 dwarfs, half normal size. Madagascar, China, India, Burma, Java, Sumatra, Celebes.

159. *Hymenoptychis sordida* Zell., Stockh. K. Vet.-Ak. Handl., 1852, p. 65.

Aldabra. 7 ♂, 2 ♀; common in the mangrove swamps, never found elsewhere. The larva probably feeds on the mangroves *Rhizophora*, *Bruguiera* and *Ceriops*. S. Africa, Calcutta, Ceylon, Rangoon, Malacca, Borneo, Marshall and Ellice Islands.

160. *Bradina aureolalis* Joann., Bull. Soc. Ent. France, 1899, p. 198.

Seychelles: Mahé and Silhouette, 24 specimens; Praslin (Fletcher). The ♀ is sometimes much suffused with fuscous.

161. *Diathraustodes leucotrigona* Hamps., Moths Ind., iv, p. 233.

Seychelles: Silhouette, 1000 ft., a single worn ♂ which in the absence of better material I refer to the above species. India (Nilgiris).

162. *Sufetula minimalis* Fletcher, Trans. Linn. Soc. London, ser. 2, Zool., xiii, 1910, p. 301.

Seychelles: Mahé; Silhouette; Félicité; coast to 1500 ft., 43 specimens. Coetivy.

163. *Zinckenia fascialis* (Cram.), Pap. Exot., iv, p. 236; Hamps., Moths Ind., iv, p. 262.

Seychelles: Mahé and Dennis, 13. Aldabra, 4. Tropical regions.

164. *Eurrhyparodes tricoloralis* (Zell.), Stockh. K. Vet.-Ak. Handl., 1852, p. 31; Hamps., Moths Ind., iv, p. 264.

Seychelles: Mahé; Silhouette; Dennis, 28 specimens. Africa, Mauritius, India, Ceylon, islands of Indian Ocean, Java, Australia.

165. *Pagyda traducalis* (Zell.), Stockh. K. Vet.-Ak. Handl., 1852, p. 54; Hamps., Moths Ind., iv, p. 272.

Seychelles: Mahé, 3 ♂; St Anne (Fletcher). Tropical regions.

166. *Ercta ornatalis* (Dup)., Lép. France, viii, p. 207; Hamps., Moths Ind., iv, p. 274.

Seychelles: Mahé; Silhouette; Praslin; Félicité; Frigate; Dennis. Tropical regions.

167. *Marasmia venilialis* (Walk.), Cat., xvii, p. 373; Hamps., Moths Ind., iv, p. 276.

Seychelles: Mahé; Silhouette. Africa, Mauritius, India, Ceylon, islands of the Indian Ocean, Australasian region.

168. *Marasmia trebiusalis* (Walk.), Cat., xviii, p. 718; Hamps., Moths Ind., iv, p. 276.

Seychelles: Mahé and Silhouette, coast to 1000 ft.; Bird. W. Africa, India, Ceylon, Hongkong, Sumatra, Fiji.

169. *Marasmia trapezalis* (Guen.), Delt. et Pyr., p. 200; Hamps., Moths Ind., iv, p. 277.

Seychelles: Mahé; Silhouette; Frigate; coast to 1000 ft. Tropical regions.

170. *Syngamia abruptalis* (Walk.), Cat., xvii, p. 371; Hamps., Moths Ind., iv, p. 279.

Seychelles: Mahé, 1 ♀ (Fletcher, Mahé, 3 specimens). Africa, Mauritius, India, Australasian regions.

171. *Nacoleia niphealis* (Walk.), Cat., xviii, p. 638; Hamps., Moths Ind., iv, p. 313.

Seychelles: Mahé; Silhouette; Dennis; Frigate; coast to 1500 ft.

172. *Nacoleia maculalis* Fletcher, Trans. Linn. Soc. London, ser. 2, Zool., xviii, 1910, p. 304.

Seychelles: Praslin, 1 example (Fletcher).

173. *Nacoleia vulgalis* (Guen.), Delt. et Pyr., p. 202; Hamps., Moths Ind., iv, p. 315.

Seychelles: Mahé; Silhouette; Bird; Dennis; coast to 1500 ft. The Mahé and Silhouette specimens are suffused with fuscous, those from Bird and Dennis Islands being yellow. Found throughout tropical regions.

174. *Nacoleia charesalis* (Walk.), Cat., xviii, p. 709; Hamps., Moths Ind., iv, p. 319.

Seychelles: Mahé and Félicité (15 specimens, coast to 1500 ft.). This species was described from a ♀: all the ♂s from Seychelles and other localities (Singapore, etc.) have a tuft on the antennæ at about a quarter and the species appears to require a new section near Hampson's Sect. II. India, Ceylon, Singapore, Sumbawa, Borneo, Philippines.

175. *Sylepta derogata* (Fabr.), Syst. Ent., p. 641; Hamps., Ann. Mag. Nat. Hist., ser. 8, i, 1908, p. 487.

Seychelles: Mahé, 1 specimen. Tropical regions.

176. *Glyphodes sericea* (Drury); Pag., Lep. Het. Madag., p. 135.

Seychelles: Mahé; Silhouette; 6 specimens. W. Africa, Sudan, Mashonaland, Natal, E. Africa, Madagascar.

177. *Glyphodes tritonalis* (Snell.), Tijd. v. Ent., xxxviii, 1895, p. 131.
Seychelles: Félicité, 2 specimens. South-East Africa.

178. *Glyphodes unionalis* (Hübn.); Hamps., Moths Ind., iv, p. 351.
Seychelles: Mahé, 1 specimen. Tropical and sub-tropical regions.

179. *Glyphodes stolalis* Guen., Delt. et Pyr., p. 293.
Seychelles: Mahé; Marie Anne; Félicité; Dennis; 20 specimens, all of the Seychelles form (Fletcher, *op. cit.*, p. 308). Africa, India, Ceylon, Sumatra, etc.

180. *Glyphodes subamicalis* Fletcher, Trans. Linn. Soc. London, ser. 2, Zool., xiii, 1910, p. 308.
Seychelles; Mahé, 2 specimens.

181. *Glyphodes sinuata* (Fabr.); Hamps., Moths Ind., iv, p. 358.
Seychelles; Mahé (Fletcher); Silhouette, 14 specimens, coast to 1000 ft. Africa, India, Ceylon.

182. *Glyphodes indica* (Saund.), Trans. Ent. Soc. London, 1851, p. 163; Hamps., Moths Ind., iv, p. 360.
Seychelles: Mahé; Marie Anne; Bird. Aldabra, 4. Tropics of Old World.

183. *Lepyrodes capensis* Walk., Cat., xxxiv, p. 1344.
Aldabra, 2 specimens. South Africa.

184. *Analyta calligrammalis* Mab., Bull. Soc. Philom. Paris, 1879 (2), iii, p. 143.
Aldabra. Assumption, 9 specimens. Accra, Sierra Leone.

185. *Crocidolomia binotalis* Zell., Stockh. K. Vet.-Ak. Handl., 1852, p. 66.
Seychelles: Mahé, Port Victoria (6 specimens). S. Africa, India, Ceylon, Burma, Java, Formosa, Norfolk Island, Australia.

186. *Hellula undalis* (Fabr.), Ent. Syst., iii (2), p. 226; Hamps., Moths Ind., iv, p. 373.
Seychelles: Frigate (Fletcher); Dennis, 1 specimen. Tropical regions.

187. *Omphisa anastomosalis* Guen., Delt. et Pyr. p. 373; Joann., Ann. Soc. Ent. France, 1894, p. 436.
Seychelles: Mahé (Joannis); Silhouette, 1 ♀, 1500 ft. India, Ceylon.

188. *Ischnurges expeditalis* (Led.), Wien. Ent. Mon., vii, pp. 372, 466, t. 9, fig. 15 (1863).
Aldabra, 1 ♀. S. Africa.

189. *Nomophila noctuella* (Schiff. und Denis), Syst. Schmett. Wien, p. 136 (1775).
Assumption, 1 ♀. Universal.

190. *Pachyzancla phæopteralis* (Guen.), Delt. et Pyr., p. 349; Hamps., Moths Ind., iv, p. 402.
Seychelles: Mahé, Silhouette, Praslin (Fletcher); 5 specimens, 800—1500 ft. Africa, India, and Neo-tropical Regions.

191. *Pachyzancla mahensis* Fletcher, Trans. Linn. Soc. London, ser. 2, Zool., xiii, 1910, p. 310.
Seychelles: Mahé. Apparently unrepresented in present collection.

192. *Pachyzancla minoralis* (Warren), Ann. Mag. Nat. Hist., ser. 6, ix, 1892, p. 435.

Seychelles: Mahé. West Africa, Accra, Lagos.

193. *Phlyctenodes massalis* (Walk.), Cat., xviii, p. 792; Hamps., Moths Ind., iv, p. 408.

Seychelles: Frigate and St Anne (Fletcher, not in present collection). Aldabra, 9 specimens. Accra, Transvaal, Madagascar, India, Ceylon, Queensland.

194. *Antigastra catalaunalis* (Dup.), Lép. France, viii, p. 330; Joann., Ann. Soc. Ent. France, 1894, p. 436.

Seychelles: Mahé (Joannis: not in present collection). Universal.

195. *Pionea ferrugalis* (Hübn.); Hamps., Moths Ind., iv, p. 422.

Seychelles: Mahé, Silhouette; 5 specimens. Universal in Old World.

196. *Pionea aureolalis* (Led.), Wien. Ent. Mon., vii, 1863, pp. 375, 473.

Aldabra, 3 specimens. India, Ceylon, Andamans.

197. *Pyrausta incoloralis* (Guen.), Delt. et Pyr., p. 332; Hamps., Moths Ind., iv, p. 438.

Aldabra, 1 specimen. Syria, Aden, Congo, South Africa, India to Australia.

198. *Pyrausta mahensis* Fletcher, Trans. Linn. Soc. London, ser. 2, Zool., xiii, 1910, p. 311.

Seychelles: Mahé; Silhouette; 16 specimens, 80—1500 ft.

EXPLANATION OF PLATE 1.

Fig. 1. *Ilema contorta*, n. sp., ♂. (See text throughout for *expanse*.)
Fig. 2. *Mahensia seychellarum*, gen. et sp. n., ♂.
Fig. 3. *Mahensia seychellarum*, gen. et sp. n., neuration of wings.
Fig. 4. *Philenora subfusca*, n. sp., ♂.
Fig. 5. *Rhodogastria aldabrensis*, n. sp., ♂.
Fig. 6. *Fodina aldabrana*, n. sp., ♂.
Fig. 7. *Oruza rupestre*, n. sp., ♂.
Fig. 8. *Simplicia inareolalis*, n. sp., neuration of wings.
Fig. 9. *Hydrillodes perplexalis*, n. sp., ♂, palpus.
Fig. 10. *Rivula dimorpha*, n. sp., ♂.
Fig. 11. *Chusaris nigerrimalis*, n. sp., ♂.
Fig. 12. *Porthesia pectinata*, n. sp., ♂.
Fig. 13. *Scardamia percitraria*, n. sp., ♂.
Fig. 14. *Ozolla inexcisata*, n. sp., ♂.
Fig. 15. *Eagris sabadius* Gray, var. *aldabranus*, n. var., ♂.
Fig. 16. *Rhodoneura tibiale*, n. sp., ♂.
Fig. 17. *Rhodoneura apicale*, n. sp., ♂.
Fig. 18. *Rhodoneura aldabrana*, n. sp., ♀.
Fig. 19. *Crambus auronivellus*, n. sp., ♂.
Fig. 20. *Diptychophora muscella*, n. sp., ♂.
Fig. 21. *Endotricha flavofascialis*, n. sp., ♂.

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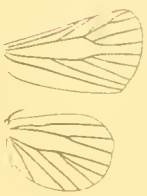

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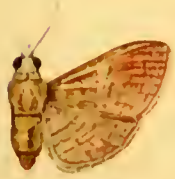

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E. Wilson, del.

LEPIDOPTERA FROM SEYCHELLES

No. II.—HYMENOPTERA, APOIDEA.

By T. D. A. Cockerell, *Professor of Systematic Zoology, University of Colorado.*

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

(Text-figures 1—3.)

Read 15th June, 1911.

The interesting series of bees brought together by Mr Hugh Scott shows that the islands of the Indian Ocean are by no means so poor in these insects as the previous scarcity of records might have suggested. The present paper deals almost wholly with the species of two groups, the Seychelles and Aldabra, including with the latter Assumption Island.

The Seychelles bee-fauna may be divided into groups as follows:

(1) Endemic species, apparently without close relatives elsewhere: *Sphecodes scotti*, *Halictus mahensis.*

(2) Endemic or precinctive species and subspecies, very closely allied to those found elsewhere. These may be again divided into

(*a*) Species of Holarctic affinities: *Ceratina nodosiventris*, *C. tabescens.*

(*b*) Species of African affinities: *Mesotrichia incerta seychellensis.*

(*c*) Species of Indo-Pacific affinities: *Lithurgus scotti.*

(3) Wide-spread species, perhaps introduced by man: *Megachile disjuncta*, *M. rufiventris*, *M. seychellensis*, *Apis unicolor.* The case of *Megachile seychellensis* is peculiar. In its typical form, it is known from the Seychelles and Farquhar, but it has a small race in Aldabra. The Hawaiian *M. palmarum* is almost identical. Thus we seem to have a widespread insular type, with slightly differentiated species or races.

The absence of any distinct Indian element will be noted.

The Aldabra fauna may be similarly divided:

(1) Endemic species, very distinct: *Halictus aldabranus*, *Ceratina fryeri.*

(2) Endemic or precinctive species and subspecies, very closely allied to those found elsewhere:

(*a*) Species of Holarctic affinities: *Halictus nicolli*, *Heriades aldabranus.*

(*b*) Race of Seychelles species: *Megachile seychellensis aldabrarum.*

(3) Madagascar species: *Anthophora antimena.*

The Aldabra fauna seems not to have been contaminated by human introductions. It is in strong contrast with that of the Comoro Islands, some 200 miles to the south-west. From the Comoros Friese (1907) records *Apis mellifera* L., *A. unicolor* Latr., *Halictus* 2 spp. not determined, *Megachile rufiventris* Guér., *Gronoceras felina* Gerst., *Mesotrichia caffra* L. (I suppose really *incerta* Pérez), *M. olivacea* Spinola, and *M. lateritia* Klug,—an essentially African fauna, with nothing precinctive, unless the undetermined species of *Halictus* are so.

Here, as in the Pacific, it is noted that many of the insular bees are such as habitually nest in wood, e.g. *Megachile, Ceratina* and *Mesotrichia.* It is probable that they have sometimes been carried across the sea by floating trees containing the nests. In the case of the Seychelles, it appears that they might receive material from the Malay region, the equatorial current setting west and ultimately north-west. On the other hand there are apparently currents also from the African coast region. No current, however, flows from India to the Seychelles and, so far as the bees go, there may be said to be no truly Indian element in the fauna.

The bee-fauna of the Maldives is frankly Oriental, and quite distinct from that of the Seychelles.

Family **Andrenidæ.** Subfamily **Sphecodinæ.**

Sphecodes Latreille.

1. *Sphecodes scotti,* sp. nov.

♀. Length about 7—7½ mm., very slender, looking like a male; head rather large, approximately circular seen from in front, black, with the clypeus, lower part of supra-clypeal area, labrum and mandibles all clear ferruginous; lower margin of clypeus with long shining hairs; sides of face broadly covered with appressed silvery (faintly yellowish) pubescence; ocelli moderate; front with dense extremely minute punctures, and a tendency to striæ; third and fourth antennal joints extremely short, broader than long, fourth at least twice as broad as long; second longer than third; scape with the basal two-thirds red; flagellum shining black, dull reddish beneath at extreme base; mesothorax shining, finely punctured, parapsidal grooves distinct; the surface between the punctures is microscopically tessellate; thorax with a fine short hoary pubescence at sides and behind, but very free from hair; mesothorax black, its middle third reddish or wholly dark red; scutellum small, red; postscutellum and upper part of metathorax black, the rest of thorax, including prothorax, pleura &c., all clear red; metathorax long, the basal area elongate, defined by the absence of the small branched hairs which clothe the adjacent parts, its sculpture consisting of a fine raised reticulation; legs red, with little hair (no scopa), middle and hind tibiæ and basitarsi strongly blackened; tegulæ shining ferruginous; wings ample, pale dusky, nervures and stigma piceous; stigma large; first r.n. joining second s.m. far beyond middle but well before end; second r.n. joining third s.m. slightly or well beyond middle; submarginal cells variable; abdomen narrow, brilliantly shining, clear red beneath, above fuscous with the basal half of first segment (except more

or less at sides), narrow band at base of second, broad bands at base of third and fourth, and sides of third, all light ferruginous; dark parts of fourth and fifth segments black or brown; no caudal rima, the fifth segment covered with fine hair. Hind spur minutely pectinate, with about 13 teeth. Mouth-parts (measurements all in μ): mandibles simple,

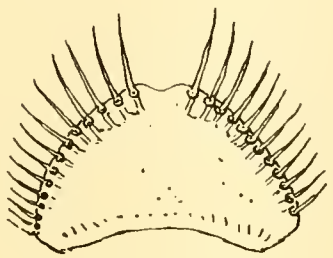

Fig. 1. *Sphecodes scotti*, labrum of female.

1020 long, 375 broad at base; labrum as shown in accompanying figure; blade of maxilla very short; maxillary palpi with joints measuring: (1) 100, (2) 135, (3) 160, (4) 160, (5) 160, (6) 160. Labial palpi: (1) 135, (2) 120, (3) 100, (4) 120. Tongue short, pointed, length 425, breadth at base 220.

Localities. Seychelles Islands, five females collected by Mr Hugh Scott. The type is from Silhouette, "plateau of Mare aux Cochons," September 1908. The others are all from Mahé; two from Cascade Estate, about 1000 ft. alt., February—March 1909, two from Cascade Estate, 800—1000 ft., not dated.

This is an extremely distinct species, easily known by its largely red thorax. I do not know any related form, although some *males* of other species look very similar.

Subfamily **Halictinæ.**

Halictus Latreille.

2. *Halictus aldabranus*, sp. nov.

♂. Length about 4½ mm., slender, black; clypeus yellow, with lateral margins and two broad discal bars dark; the discal bars are rounded at each end, and do not nearly reach base or apex of clypeus; the lateral lobes of clypeus have their yellow in the form of a subpyriform patch, nearly divided from the rest of the yellow by a black band; labrum broad and short, black; mandibles black, red at extreme tip; molar space nearly obsolete; tongue long and slender, extending about 340 μ beyond the labial palpi; palpi normal, length of maxillary palpi about 645 μ; hind part of cheeks with long dull white finely plumose hair; eyes very strongly emarginate within; ocelli large, diameter of middle ocellus about 135 μ; head and mesothorax with very fine sculpture, minutely lineolate passing into reticulate; antennæ long, entirely black, the flagellum hardly crenulated; second and third antennal joints very short, their combined length about equal to fourth (about 170 μ); postscutellum lemon yellow; tubercles yellow; metathorax shining but punctured, the truncation not distinctly defined, but the large basal area distinct, under a lens appearing dull and granular, but when more magnified showing a very fine irregular raised reticulation, passing into distinct plicæ at the sides; tegulæ piceous, not punctured;

wings more or less dusky, strongly so at apex, stigma and nervures piceous; first r.n. joining second t.c.; second s.m. small, narrowed to a point above; length of first s.m. below about equal to that of the other two combined (about 375 μ); outer side of third s.m. with a single gentle curve; outer nervures not at all weakened; legs black, with dull white hair; small joints of tarsi reddish; abdomen black, with narrow tegumentary yellow bands along apical margins of first three segments, that on third interrupted in middle; sculpture of abdomen feeble; first segment smooth, with scattered very minute punctures visible only with compound microscope; second and third with fine transverse striæ; no hair-bands; stipites very broad, broadly rounded at end.

Locality. Aldabra 1908 (*J. C. F. Fryer*). The type is labelled 312, which shows that it was taken on Esprit Island, December 27.

The unique specimen is in poor condition, with the wings matted, but the species is so distinct that it will be easily recognized. It is doubtless endemic, and its nearest relative, so far as known to me, is *H. flavovittatus* W. F. Kirby, from Socotra. *H. flavovittatus* differs in several particulars, for instance, the postscutellum is not yellow.

3. *Halictus* (*Evylæus*) *nicolli*, sp. nov.

♀. Length about 8 mm., black, with dull white or greyish-white pubescence; structure quite ordinary; head broad, eyes very black, face with short dull white hair; mandibles with the apical half dark reddish; antennæ black, the apical part of the flagellum broadly suffused with ferruginous beneath; clypeus slightly shining; mesothorax dull, exceedingly minutely punctured; scutellum more shining; area of metathorax large, covered with fine anastomosing ridges, the intervals shining; posterior truncation rather small and indistinct; tegulæ shining dusky rufous; wings clear, iridescent; nervures and stigma reddish sepia; outer nervures evanescent; first r.n. joining second s.m. at extreme apex; second s.m. little narrowed above; legs black, with pale hair, small joints of tarsi dark reddish; anterior tibiæ ferruginous in front; a bright red brush at end of hind basitarsus; abdomen dullish, very minutely punctured, hoary with pale hair, especially the apical half; second and third segments with very strong greyish-white basal hair-bands, basal band on fourth not quite so dense, but covering more than half of segment.

The following characters are microscopical:

Hind spur with about three spines, the last a mere short lamella; third antennal joint distinctly longer than fourth; mesothorax with a minutely tessellate sculpture, and rather numerous small punctures; scutellum sculptured like mesothorax, postscutellum covered with creamy-white tomentum; abdomen distinctly though very minutely punctured on first segment.

♂. Length about 7 mm., more slender; clypeus wholly black; flagellum dull ferruginous beneath; knees, tibiæ and tarsi ferruginous, but the hind tibiæ have a large black patch in front, and the apical joint of tarsi is darkened basally; abdominal bands evanescent. The antennæ are not very long.

Localities. Female (type) from Aldabra (*R. P. Dupont*); British Museum, 1907—72. Male from Assumption Island (*R. P. Dupont*, 1909). For an account of both Aldabra and Assumption, see M. J. Nicoll, Three Voyages of a Naturalist (1908), chapters XI. and

XII. I intended to name the species after the collector, but there is already a species *H. duponti* Vachal; I therefore use the name of the author to whom I am indebted for a description of the type locality*.

This is a very ordinary species of *Evylæus*, a group common in Europe, North America and other parts of the world.

The female *H. nicolli*, except for the antennæ, has a very strong superficial resemblance to the male of *H. diversus* Smith from Willowmore, Cape Colony (*Brauns*). In *H. diversus*, however, the outer nervures are not weakened, and there are many other differences. *H. geigeriæ* Ckll., from Benguela, is really much more closely related, but differs from *H. nicolli* by the comparatively shining mesothorax, with its disc sparsely but distinctly punctured, the basal abdominal bands reduced to lateral patches, &c.

A somewhat similar species is *H. minikoiensis* Cam., from the Laccadive Islands. I examined the female type of this (Cambridge University Museum) and noted that it was rather of the type of the American *H. cooleyi*; black; head with pale hair; mesothorax dullish, with punctures of two sizes; tegulæ shining dark red-brown; flagellum ferruginous beneath; stigma and nervures ferruginous; first r.n. meeting second t.c.; hind spur with few long spines; abdominal segments with broad basal bands of pale tomentum, usually concealed in middle by segment before.

4. *Halictus mahensis* Cameron.

Halictus mahensis Cameron, Trans. Linn. Soc. London, ser. 2, Zoology, vol. xii. (1907), p. 70.

The following particulars may be added to Cameron's account:

Hind spur of female with three or four large teeth; mesothorax appearing granular under a lens, with the compound microscope seen to be minutely tessellate and with small punctures.

Mouth-parts (measurements all in μ): mandibles bidentate; maxillary blade 425 long; maxillary palpi, joints (1) 90, (2) 160, (3) 150, (4) 150, (5) 160, (6) 170. Labial palpi, (1) 170, (2) 85, (3) 120, (4) 135, the first joint robust. Tongue about 1020, tapering at end. These measurements are from a female; a male tongue measured about 935. The labrum of the female has a large lobe; I figure the labra of both sexes.

Localities. Mr Scott obtained a very large series of this species from the Seychelles, with the following data:

(1) Mahé. Cascade Estate, 800—1000 ft., 7 ♂, 1 ♀; Cascade Estate, January 1909, 1 ♂, 1 ♀; Anonyme Island, January 9, 1909, 14 ♂, 2 ♀; top of Mount Sebert, nearly 2000 ft., January 16, 1909, 1 ♀; Cascade Estate, February 1909, 2 ♂, 4 ♀; Cascade Estate, October 1908—January 1909 (*Thomasset and Scott*), 1 ♂, 1 ♀; Long Island, July 12—22, 1908, 1 ♂, 1 ♀; Cascade Estate, February 1909, 1 ♀.

(2) Dennis Island. August 1908, 3 ♂. These were collected by J. C. F. Fryer.

* [For a full and accurately scientific account of these islands see J. C. F. Fryer's article in *Trans. Linn. Soc.*, ser. 2, Zool., vol. XIV, pp. 397—442. This report was not published when the above was written.—J. Stanley Gardiner.]

(3) Silhouette. 19 ♂, 7 ♀. Most from the low country, but a female comes from the highest forest, over 2000 ft. (August 12, 1908). Two females and a male are "from marshy plateau of Mare aux Cochons, about 1000 ft.", August 27, 1908. Many are from Grande Barbe. Mr Scott writes that numbers fly around the flowers of certain palms, or round

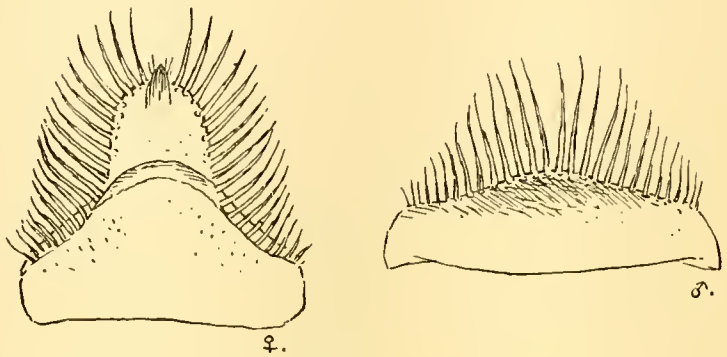

Fig. 2. *Halictus mahensis*, labrum.

flowers of a low-growing *Vinca*, &c., growing in waste places on the red earth where the jungle has been cleared.

The species does not closely resemble any known to me.

Halictus mahensis race *praslinensis* nov.

♂. Clypeus more produced, and its yellow band with a prominent upwardly directed tooth-like extension; tegulæ light reddish testaceous (much darker in typical form); hind legs usually almost entirely red.

Locality. Six males from Praslin Island, taken by Mr Scott, November 26—December 2, 1908. One has darker tegulæ, and the characters of the race are average rather than absolute ones. Mr Scott tells me that Mahé and Silhouette are much alike, but Praslin is quite a different sort of place.

Family **Ceratinidæ.**

Ceratina Latreille.

5. *Ceratina fryeri*, sp. nov.

♀. Length about 6 mm., black, strongly punctured; head large, eyes moderately converging below; face and front shining, with large punctures, so dense that the surface is cancellate; punctures of sides of face much larger than those on front; on each side of front is a delicate ridge, running downward close to the eye and turning inward below the antennæ, ending at the side of the supraclypeal area; clypeus elevated into a snout-like structure, with a broadly emarginate projecting edge; above the edge the surface is densely punctured, and has upon it a small cream-coloured triangle; below the edge is a large smooth and shining plate, covering as it were the end of the snout, and extending down to the base of the labrum; this smooth plate has nearly the shape of a half-circle; labrum with large punctures; mandibles black, extremely massive at base; eyes sage-green, black in front; a tuft of red hair at end of labrum; antennæ short, dark; thorax strongly and densely punctured, except disc of mesothorax, which is shining and has punctureless areas,

as in various other species; apical half of tubercles white, covered with white hair; legs black, the knees with a small white spot, and the anterior tibiæ with a white band on basal half; tegulæ piceous, reddish on margin; wings moderately dusky, stigma and nervures dark; abdomen broad, shining and strongly punctured, with thin white hair. Spurs pale yellowish; hind tibiæ with a prominent tooth on outer side, beyond the middle.

♀. var. *a*. Size and other characters the same, but smooth clypeal area smaller, decidedly less than a half-circle.

♀. var. *duponti*, nov. Smaller, length about 5 mm.; smooth clypeal area much smaller, bow-shaped.

♂. Size and superficial appearance of ♀ var. *duponti*; clypeus with a large hat-shaped cream-coloured area; structure ordinary, without any smooth space; labrum with a large U in pale yellow; end of abdomen obtuse, obtusely emarginate in lateral view, the morphological apex with two short teeth; tooth of hind tibia small.

Locality. Aldabra; one var. *duponti* (in British Museum) collected by R. P. Dupont; all the others (one typical ♀, three var. *a*. ♀s; one *duponti* ♀, three ♂s) by J. C. F. Fryer. One male is marked "swept from flowers." A male and a female var. *a*. are labelled 312, which shows that they were obtained on Esprit Island, December 27, 1908. Two females var. *a*. are labelled 306, which refers to "Takamaka and Île Michel, November 1908." The variety *duponti* may prove to inhabit some particular island; it looks distinct, but seems to have no characters beyond those cited.

This little species has a certain resemblance to the group of black forms common in Africa, but is very distinct by the peculiar facial structure of the female, and the toothed hind tibiæ. It is to be noted that a little black *Ceratina* (*C. madecassa* Friese) occurs in Nossi-Bé, but it is a normal member of the genus.

6. *Ceratina nodosiventris*, sp. nov.

♂. Length about 5 mm.; head and thorax dark green, the front, especially at sides, with strong brassy tints, the mesothorax shining brassy-green; clypeus nearly all ivory-white, the white taking the form of an old-fashioned tall hat with a high crown; labrum with a very small white spot; mandibles black; antennæ black, the flagellum dark red

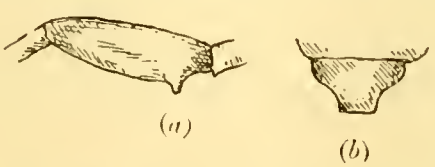

Fig. 3. *Ceratina nodosiventris*, male: (*a*) hind femur, (*b*) end of abdomen.

beneath; eyes large, converging below; sides of face dullish, densely rugosopunctate; supraclypeal area shining; front rugosopunctate; mesothorax closely punctured all over, except along the usual lines; scutellum closely and minutely punctured; tubercles largely yellowish-white; tegulæ testaceous, with a cream-coloured spot; wings dusky; legs black, the tarsi becoming dark brownish; anterior and hind tibiæ with a large cream-coloured

stripe, starting from the base, middle tibiæ with only a small spot; middle femora flattened, obtusely angulate beyond middle below; hind femora with a prominent erect tooth below near base; abdomen dark yellowish-green, the hind margins of the segments narrowly dull ferruginous; apex broadly and squarely truncate, the truncation proceeding from a much broader base, so that the side of the apex shows a very strong double curve; second ventral segment with a shining transverse tubercle near the base.

Locality. Dennis Island, Seychelles, August 1908 (*J. C. F. Fryer*).

This is a member of Ashmead's subgenus *Zaodontomerus* (cf. Ann. and Mag. Nat. Hist., December 1899, pp. 404—406), and curiously enough, appears to find its nearest relative in the palæarctic *C. dentiventris* Gerst. The apex of the abdomen, however, is not as in *dentiventris*; it may better be compared with that of the Mexican *C. bakeri* H. S. Smith, although the apical lobe is much more produced than in the Mexican insect.

7. *Ceratina tabescens*, sp. nov.

♀. Length about 4⅓ mm.; a nearly uniform dark green; clypeus with a broad ivory-white stripe, rather sharply pointed above, obtusely below, with straight sides for the greater part of its length; labrum entirely dark; flagellum dark red beneath; antennal sockets in large depressed basins; face and front shining, sides of face with large punctures on a shining ground; cheeks with a row of punctures next to orbital margins; mesothorax shining, finely punctured; tubercles largely white; tegulæ ferruginous; wings slightly dusky; second s.m. very broad at base, but narrowed to a point above (not narrowed to a point in *nodosiventris*); third t.c. practically straight above the bend (curved above the bend in *nodosiventris*); legs dark brown, femora brown-black; anterior femur with a short pale stripe beneath; anterior tibiæ with a pale stripe on outer side; hind tibiæ with about the basal half white on outer side; hind margins of abdominal segments not evidently discoloured; apex pointed as usual. The supraclypeal area is smooth and shining, with three or four punctures, whereas in *C. nodosiventris* it is covered with fine wavy irregular longitudinal striæ, with minute scattered punctures (characters determined with the compound microscope).

Locality. Mahé, Seychelles, collected by Mr Hugh Scott "in marshes on coastal plain at Anse aux Pins and Anse Royale," January 19—21, 1909.

Another species of *Zaodontomerus*, closely related to *C. nodosiventris*, but evidently not its female, from the smaller size, and the differences in sculpture and venation. It very closely resembles *C. nautlana* Ckll., from Mexico and Costa Rica.

Family **Xylocopidæ.**

Mesotrichia Westwood.

8. *Mesotrichia incerta seychellensis*, subsp. nov.

♂. Like *M. incerta* (Pérez), but hair of abdominal venter white at sides, black in middle, nowhere yellow; long hair of anterior tarsi black, but some yellow above (especially at base) and reddish beneath; hair of middle tarsi black, but dense and fulvous beneath beyond basitarsus; hair of hind tarsi entirely purplish-black; apical segment of abdomen

black, covered with black hair which is more or less reddish at ends, and with a median patch of bright yellow hair above; black hair on hind tibia forming a broad band.

Compared with *M. caffra* (L.) it is uniformly smaller, and differs in the dark colour of the hair of the tarsi, as well as in having a vertical yellow band on the clypeus. The hair on the middle of the abdominal dorsum is much shorter than in *caffra*.

♀. Like that of *M. caffra* but smaller, length about 18 mm.

Locality. Mahé, Seychelles, both sexes (*H. Scott*). Two males are dated November 1908. A female has been opened, and found to contain the usual abdominal mites, belonging to the genus *Paragreenia*.

This is the insect recorded from the Seychelles by Pérez (Ann. Soc. Ent. France, 1895, p. 205) as *Xylocopa caffra* and by Cameron (Trans. Linn. Soc. London, ser. 2, Zool. xii., p. 70) as *Koptorthosoma caffrum*. Upon comparing the Seychelles series (5 ♀, 4 ♂) with a good series of genuine *M. caffra* from Cape Colony, I am convinced that they are separable, though very closely allied. On the other hand, *M. incerta* Pérez, from Nossi-Bé, has most of the essential characters of the Seychelles insect, and the differences are only such as might be attributed to variation. Considering the remote locality of the Seychelles bee, it might seem more logical to treat it as a species, but there is a certain practical advantage in connecting it with *M. incerta*; and, in fact, it is not impossible that it represents *incerta* introduced by man at an early date, and now somewhat modified.

Family **Anthophoridæ**. Subfamily **Anthophorinæ**.

Anthophora Latreille.

9. *Anthophora antimena* Saussure.

Anthophora antimena Sauss.; Grandidier, Hist. Madagascar, xx., Pt. i. (1891), p. 6.

Locality. Aldabra, September 1908, one female (*J. C. F. Fryer*).

I have never seen an authentic specimen of *A. antimena*, described from Madagascar, and so make my determination with a certain measure of doubt, since the bee belongs to a group of closely allied forms, difficult to separate. There are however several characters which seem to be distinctive, and agree with those described for *antimena*. Such are the dull greyish fulvous ("fulvo-cinereus") tint of the pubescence, with a plentiful admixture of dark hairs on the head and thorax above ("pilis fuscis intermixtis"); the thin but evident appressed fulvous hair on the dark parts of the abdomen ("abdomine fulvo-cinereo appresso-piloso"); the dullish fulvous apical bands; the conspicuous patch of black hair in the middle of the fifth segment ("segmento 5° ♀ macula nigra"); and the black hair on the inner side of the hind tibia and basitarsus. The wings are faintly dusky; the hair on the outer side of the hind legs is ochraceous; the labrum is yellow, with the usual basal spots; the clypeus has a transverse yellow band, joined with a median upright one which runs to a point; there are the usual supraclypeal and lateral marks.

It is fully 200 miles from Madagascar to Aldabra, but there are other islands between.

Family **Megachilidæ**. Subfamily **Lithurginæ**.

Lithurgus Berthold.

10. *Lithurgus scotti*, sp. nov.

Length, ♂ about 11½, ♀ about 12 mm., black with hair at apex of abdomen black or brownish-black. A species of the group of *L. atratus* Smith (India), *L. atratiformis* Ckll. (Australia) and *L. albofimbriatus* Sichel (Tahiti); so close to these that only a comparative description is useful. It differs from all three in having the first recurrent nervure exactly meeting the first transverso-cubital.

I possess only the male of *L. atratus*; from this *L. scotti* male differs at once by the nearly simple character of the hind tarsi. The basitarsus is distinctly curved, with its apical two-fifths swollen behind, but the apex is not expanded or in any way peculiar. The front and vertex in *atratus* are covered with black hair, while in *scotti* the front is clothed with pale ochreous (a few dark hairs intermixed in the region between the antennæ), while that of the vertex is mixed black and dull pale ochreous. In *atratus* the white bands of the abdomen are conspicuous above and beneath; in *scotti* they are reduced, and not so white, though quite evident toward the sides of the dorsal segments. In *atratus* the marginal cell is much more sharply pointed, and the second submarginal is much longer in proportion to its height.

Compared with female *L. atratiformis*, the female *scotti* is at once distinguished by the wholly pale (creamy-white) hair of pleura (it is black in *atratiformis*), but by the venation and other characters it is very closely allied.

Compared with female *L. albofimbriatus*, it is noted that the hair of the lower part of the cheeks is strongly mixed with black in *albofimbriatus*, while it is all pale yellowish in *scotti*. In both, the lower margin of the clypeus is bearded with shining orange hair. The hind legs of male *albofimbriatus* are formed practically as in *scotti*. The hair of the mesothorax and scutellum in male *albofimbriatus* is black, but in *scotti* it is greyish-white, mixed with black on scutellum. In female *L. albofimbriatus* the supraclypeal area is prominently keeled, but in *scotti* there is a raised smooth line, hardly a keel.

Locality. Mahé, Seychelles, one of each sex (*H. Scott*). The male is from Cascade Estate, 800—1000 ft.; the female from Anonyme Island, January 1909.

This is evidently quite distinct from *L. illudens* Sauss., from Madagascar. I have *L. albofimbriatus* not only from Tahiti, but also from the Hawaiian Islands, whence I have received both sexes from Dr Perkins, with the statement that it was introduced about 1899.

It may be worth while to remark that the differences given by Bingham (Fauna Brit. India) to separate *L. atratus* from *L. dentipes* are mainly sexual. *L. dentipes* was based on a male from Australia; it can be distinguished from the male of *L. atratiformis* by the colour of the pubescence.

The *Lithurgus* of Christmas Island (*L. andrewsi* Ckll.) is very distinct from *L. scotti*.

Subfamily **Osmiinæ.**

Heriades Spinola.

11. *Heriades aldabranus*, sp. nov.

♀. Length 5½—6 mm.; black, moderately robust, with the usual scanty white hair abdomen with extremely narrow but distinct white hair-bands on all the segments; ventral scopa white. A very ordinary little species, closely related to the European *H. truncorum* and the American *H. carinatus*, differing only as follows: general form rather more compact, the abdomen rather short; clypeus with a pair of strong nodules on its lower margin, these about 255 μ apart (not contiguous as in *truncorum*); mandibles about as in *carinatus* (much shorter than in *truncorum*), slightly reddish apically; eyes distinctly converging below (like *carinatus*, not like *truncorum*); clypeus and supraclypeal area dull, minutely densely granular-punctate; vertex moderate, distance from top of eye to occiput about equal to distance to lateral ocellus (in *truncorum* especially the vertex is much broader); diameter of cheeks less than diameter of eye (greater in *truncorum*); mesothorax and scutellum shining, but entirely covered with large punctures, which have a diameter of about 70 μ (in *truncorum* the sculpture is similar, but somewhat finer); the metathorax and base of abdomen offer nothing peculiar, except that the margin of the abdominal basin is practically straight (strongly concave in *truncorum*); legs quite ordinary (as in *truncorum*), the hind basitarsus more than half the width of the tibia; wings as in *carinatus*, with the same venation, but not quite so dusky (considerably darker in *truncorum*); sculpture of abdomen essentially as in *truncorum*, but segments 4 to 6 about equally (not densely) clothed with short appressed white hair. The face has finely plumose white hair at the sides, but is not densely covered as it is in *H. argentatus* Gerst. The pleura is thinly clothed with white hair.

Locality. Aldabra, September 1908, 2 ♀ (*J. C. F. Fryer*). One is labelled "swept from flowers." One of the specimens has a parasitic mite upon the thorax.

Subfamily **Megachilinæ.**

Megachile Latreille.

12. *Megachile disjuncta* (Fabricius).

Apis disjuncta Fabricius, Sp. Insect. I, p. 481 (1781).

Locality. Mahé, Seychelles (*H. Scott*). One is from near Morne Blanc, 1908; another from Long Island, July 1908.

13. *Megachile rufiventris* Guérin.

Megachile rufiventris Guérin; Bélanger, Voy. Ind. Orient., p. 502 (1834).

Localities. Mahé, Seychelles, two females, one from Long Island, July 1908 (*H. Scott*); Félicité Island, December 1909 (*H. Scott*). This species has been reported as *M. mystacea* (Cameron, Trans. Linn. Soc. Lond. xii. 1907, p. 70), but that Australian species is certainly distinct, as F. Smith long ago pointed out.

14. *Megachile seychellensis* Cameron.

Megachile seychellensis Cameron, Trans. Linn. Soc. Lond., ser. 2, Zoology, vol. xii., p. 71 (1907).

Locality. Mahé, Seychelles (*H. Scott*); Silhouette, Seychelles (*H. Scott*); Praslin, Seychelles (*Gardiner*); Farquhar Atoll (*Gardiner*). The Silhouette specimen, one female, is from Mare aux Cochons, September 1908. Mahé specimens have the following data: (1) Cascade Estate, 800—1000 ft.; (2) Cascade Estate, about 1000 ft., December 1908; (3) near Morne Blanc, 1908; (4) Long Island, July 12—22, 1908.

Mr Scott writes that they burrow in banks, in the red earth. He sends some nests, which are made of leaves in the usual manner. The cells are about 14 mm. long and 7½ broad.

Cameron describes the ventral scopa as white, but it is black on the last segment and the greater part of the fifth. The species appears to be very closely related to *M. albiscopa* Saussure, from Madagascar. It is a very ordinary little species, greatly resembling the European *M. apicalis* Spinola; and also very similar to the Australian *M. quinquelineata* Ckll. Both sexes vary considerably in size; one male from Mahé is only about 8 mm. long.

I find, to my surprise, that it is almost impossible to distinguish *M. seychellensis* from the Hawaiian *M. palmarum* Perkins, 1899. In the female, *M. palmarum* has the mesothorax evidently less densely punctured, and the black hair of the ventral scopa is confined to the last segment. The extreme sides of the third and fourth segments show some black hair in *seychellensis*, whereas in *palmarum* this is found only on the fifth and sixth. The black hair at the sides of the abdomen also serves to distinguish the male *seychellensis*. The males, however, are almost exactly alike, and had they been found in the same region no one would have thought of separating them.

Perkins states that *M. palmarum* nests frequently in leaves of coconut and other palms, when they have been rolled up by the larva of a Pyralid. The nesting habits are therefore different from those of *M. seychellensis*.

Dr Perkins expresses the opinion that *M. palmarum* has been introduced into the Hawaiian Islands by man, as it is now common in Honolulu, but was not collected by Blackburn, who could hardly have overlooked it, had it been present in his time.

Megachile seychellensis race *aldabrarum* nov.

Agreeing with *M. seychellensis*, but uniformly smaller; males 7 to 8, females 8 to 9 mm.; hair on inner side of hind tarsi paler and duller.

Localities. Aldabra, 1 ♂, 4 ♀, 1908 (*J. C. F. Fryer*); Aldabra, one male, December 1908 (*Fryer*). Assumption Island, 5 ♀ (*R. P. Dupont*).

Family **Apidæ.**

Apis Linnæus.

15. *Apis unicolor* Latreille.

Apis unicolor Latr., Ann. Mus. Hist. Nat., v. (1804), p. 168.

Localities. Numerous workers from Mahé and Silhouette, Seychelles (*H. Scott*); one from Cosmoledo, 1907 (*H. P. Thomasset*). A male from Cascade Estate, Mahé, March

1909, is very black, as described by Friese; Cameron's male, described in the former report, was not genuine *unicolor*. Workers bear data as follows:

(1) Mahé. Long Island, July 12—22, 1908; Cascade Estate, February 1909. Others are from various localities not specified.

(2) Silhouette. Grande Barbe, August 2, 1908; Mare aux Cochons, collected by Gardiner.

This species was also obtained in the Amirantes and Chagos Islands (1905): see Cameron, Trans. Linn. Soc. Lond., ser. 2, Zool., xii, p. 69 (1907).

Apis unicolor var. *adansoni* (Latreille).

Apis adansoni Latr., Ann. Mus. Hist. Nat. v. (1804), p. 172.

Localities. Three workers from Cosmoledo, 1907 (*H. P. Thomasset*); one from Mahé, Seychelles (*Gardiner*). In only one (from Cosmoledo) is the scutellum largely ferruginous; the others have it black, thus differing from true *adansoni*. In one (from Cosmoledo) the yellowish-ferruginous covers the first three abdominal segments, except the hind margins; in the others it does not get beyond the second.

I include this variety under the continental (African) *adansoni*, because it is impossible to define it satisfactorily as a distinct form. I believe, however, that it has arisen independently from *A. unicolor*, to the typical form of which it is probably recessive. It appears to be the prevalent form on Cosmoledo, but very rare in the Seychelles. It is curious that no *Apis* was collected in the Aldabra group.

No. III.—HYMENOPTERA, DIPLOPTERA.

By Geoffrey Meade-Waldo, B.A.

(Communicated by Professor J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 15th June, 1911.

Fam. **Eumenidæ**, Westw.

Eumenes, Fabr.

1. *Eumenes alluaudi* Pérez, Ann. Soc. Ent. France, lxiv, p. 206 (1895); Cameron, Trans. Linn. Soc. London, ser. 2, Zool., xii, p. 71 (1907).

Seychelles. Mahé, Praslin (1905); Mahé, Silhouette, Dennis Island, Praslin (1908—9); also mud cells.

This insect very often makes its cells in rooms: it was not observed in the highest forests.

Odynerus, Latr. Subgenus Leionotus, Sauss.

2. *Odynerus trilobus* (Fabr.); Lepel., Hist. Nat. Ins. Hymén., ii, p. 635 (1841).

Odynerus chagosensis Cameron, *op. cit.*, p. 73.

Odynerus cœnocephalus Cameron, *op. cit.*, p. 72.

Odynerus chagosensis Cam. ♀ is a variety of *O. trilobus*, viz. Var. B, Sauss., Étud. Fam. Vespid. i, p. 186 (1852), recorded from Mauritius, with yellow markings on the disc of the mesonotum; the clypeus differs from that of typical *O. trilobus* in being entirely yellow. *Odynerus cœnocephalus* Cam. is typical *O. trilobus* (Fabr.).

Chagos Group: Salomon Atoll and Peros Banhos (1905).

O. trilobus is a common and widely distributed species, and is known from Madagascar, Mauritius, Réunion and S. Africa. The species has doubtless found its way to the majority of the islands in the Indian Ocean.

3. *Odynerus farquharensis* Cameron, *op. cit.*, p. 74, ♀.

Type from Farquhar Atoll (1905); a large series of females and one male from Aldabra (Fryer, 1908—9).

4. *Odynerus seychellensis* Dalla Torre, Genera Insectorum, Fascic. 19, p. 54 (1904).

Odynerus cylindricus Pérez (nec Saussure), Ann. Soc. Ent. France, lxiv, p. 207 (1895); Cameron, *op. cit.*, p. 72.

Amirantes: Desroches Island and Poivre Island (1905).

Seychelles: Mahé, Silhouette, Praslin; not from the high damp mountain-forests (Hugh Scott, 1908—9).

Also Mauritius.

Fam. **Vespidæ**, Steph.

Polistes, Latr.

5. *Polistes macaensis* Fabr., Ent. Syst., ii, p. 259 (1793).

Polistes hebræus Cameron (nec Fabr.), Trans. Linn. Soc. London, ser. 2, Zool., xii, p. 71 (1907).

Though the specimens are not quite typical, there can be very little doubt as to the identity of the Seychelles *Polistes*: a comparison between the series from these islands and the type ♀ in the Banksian Collection makes this abundantly clear. In the Seychelles ♀ there is usually no trace of red at the base of the second abdominal tergite, only occasionally is there a little; in the type from Macao the base of this tergite is reddish, contrasted with the yellow apex; neither this specimen nor the Seychelles specimens have the hind tibiæ darkened. Distinction can best be drawn between *P. macaensis* and the nearly allied *P. hebræus* in the ♂, Dr R. C. L. Perkins having drawn attention (Ent. Mo. Mag., (2), xii, 1901, p. 264) to the excellent characters supplied by the spines on the seventh sternite. Two ♂ were collected in the Seychelles, and in them these spines are closely approximated, very long, and spatulate at the apex: spines of this form are characteristic of *P. macaensis*, whereas in *P. hebræus* they are far apart, very short, and pointed at the apex.

Seychelles: Mahé and Silhouette, from low cultivated country, but not from the high forests (Hugh Scott, 1908—9); Praslin (1905). Chagos Islands: Salomon Atoll and Diego Garcia (1905). Amirantes Islands: Desroches Island, &c. (1905). A large series.

Note. The thoracic and abdominal markings of *Odynerus seychellensis* are of a striking reddish-chrome colour (vide Répertoire des Couleurs); this colour is also prevalent in *Eumenes alluaudi* Pérez, from the Seychelles, and in the fossor, *Crabro* (*Dasyproctus*) *scotti*, Turner (Trans. Linn. Soc. London, ser. 2, Zool., xiv, p. 373, 1911). It would seem that the insects with markings of this colour are indigenous to the Seychelles, since none of the three species mentioned are found outside the group; on the other hand, the widely spread and imported species preserve their normal type of marking.

No. IV.—HYMENOPTERA, PROCTOTRUPOIDEA.

Von Prof. Dr. J. J. Kieffer (*Bitsch*).

(Tafeln **2, 3** und 5 Textfiguren.)

(Mitgeteilt von Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Gelesen den 15. Juni 1911.

Die Hymenopteren, die hier in Betracht kommen, zerfallen in die Familien der *Dryinidæ*, *Bethylidæ*, *Ceraphronidæ*, *Scelionidæ*, *Diapriidæ*, *Belytidæ* und *Platygasteridæ*. Zu den Dryiniden gehören 3 Arten mit 4 Exemplaren; zu den Bethyliden 7 Arten mit 26 Exemplaren, zu den Ceraphroniden 2 Arten mit je 1 Exemplar, zu den Scelioniden 30 Arten mit 189 Exemplaren, zu den Diapriiden 13 Arten mit 49 Exemplaren, zu den Belytiden 7 Arten mit 83 Exemplaren, zu den Platygasteriden 4 Arten mit 5 Exemplaren. Es wurden also 358 Individuen untersucht und dieselben zerfallen in 66 verschiedene Species. Das Material wurde in den letzten Monaten des Jahres 1908 und in den ersten Monaten des folgenden Jahres, von Hugh Scott gesammelt: die Typen der neuen Arten befinden sich im British Museum.

I. **Dryinidæ (Anteonidæ).**

Mesodryinus Kieffer, in André, Spec. Hym. Eur. vol. ix. 1906, p. 497.

1. *Mesodryinus mahensis*, n. sp. (Plate **2**, figs. 1, 2).

♀. Bräunlichrot und kahl; Kopf rotbraun, Gelenke der Antennen und der Beine blass, Abdomen schwarz, ausgenommen das 1. und das letzte Segment. Kopf etwas quer, glänzend, sehr fein und kaum merklich punktiert, Stirn trapezförmig, breiter als die Augen, kaum gewölbt, eine Linie reicht von der vorderen Ocelle bis. zwischen den Antennen, Hinterkopf nicht gerandet, abgestutzt, hintere Ocellen den Hinterrand des Kopfes berührend, Augen kahl, Mandibeln 4-zähnig, äusserer Zahn länger. Maxillarpalpen 5- oder 6-gliedrig, den Hinterrand des Kopfes berührend. Antennen schwach keulenförmig, 1. Glied bogig, doppelt so lang wie dick, 2. dünner, um die Hälfte länger als dick, 3. am dünnsten, doppelt so lang wie das 1. und 2. zusammen, 4. kürzer als die Hälfte des 3., kaum länger als das 5., welches dreimal so lang wie dick ist, 4.-9. allmählich verdickt und verkürzt, 9. noch fast doppelt so lang wie dick, wenig kürzer als das 10. Glied. Thorax sehr lang, schmaler als der Kopf, Prothorax mehr als zweimal so lang wie dick, fast walzenrund, glatt, mit einer vorstehenden, elliptischen Stelle hinter der Mitte; Mesonotum nach hinten allmählich breiter, kaum $\frac{2}{3}$ der Länge des Prothorax erreichend, fein punktiert, ohne Parapsidenfurchen; Scutellum ohne Querfurche; Mediansegment länglich, allmählich abschüssig, matt und lederartig. Flügel rauchig, Flügelgrund

und eine durchlaufende Querbinde unter dem Stigma weiss, Cubitus aus dem vorderen Viertel des Nervulus entspringend, in der Querbinde blass, eine grosse Cubitalzelle bildend; Radius winkelig, distaler Teil fast doppelt so lang wie der proximale, durch eine feine vena spuria mit dem Vorderrand verbunden; Stigma schmal, lanzettlich, braun mit weisser Basis; 5—6 Frenalhäckchen. Vordere Coxæ wenig länger als die Trochanteren, diese halb so lang wie die Femora, vorderer Metatarsus so lang wie das 4. Glied, 2., 3. und 5. Glied sehr kurz, nicht länger als dick; inneres Glied der Scheere (Fortsatz des 5. Tarsengliedes) bis zum 2. Tarsenglied reichend, mit zwei Reihen weisser und dichter Lamellen, am Ende stark eingekrümmt, die Lamellenreihen an der eingekrümmten Stelle unterbrochen; äusseres Scheerenglied (Kralle) fast gerade, nur distal schwach bogig, mit einer Reihe sehr weit voneinander abstehender Lamellen und mit einem kurzen Zahn vor der Spitze. Abdomen depress, Analsegment stark lamellenartig seitlich zusammengedrückt. Länge: 5 mm.

Vorkommen. Seychellen-Inseln. Mahé: Country above Port Glaud, about 500—1000 feet, 5. XI. 1908, 1 ♀.

Labeo Haliday, Entom. Mag. i. 1833, p. 273.

2. *Labeo saxetanus*, n. sp.

♂. Schwarz und fein behaart; Mandibeln, Palpen, Coxæ und Beine gelb, hintere Tibien schwarzbraun. Kopf matt und fein chagrinirt, hinten mitten bis zu den Augen abgestutzt, an den Schläfen etwas nach hinten vorgezogen, nicht gerandet, Scheitel und Stirn schwach gewölbt, Augen fein behaart, oben den Hinterrand des Kopfes berührend, dreimal so lang wie die Wangen, diese durch eine Furche vom Gesicht getrennt, Ocellen ein Dreieck bildend, die hinteren von den Augen um ihren Durchmesser entfernt, den Hinterrand des Kopfes fast berührend. Maxillarpalpen den Hinterrand des Kopfes überragend, 5-gliedrig, das 1. Glied sehr kurz, die übrigen lang, Labialpalpen sehr kurz, 2- oder 3-gliedrig. Die zwei ersten Antennenglieder fast doppelt so lang wie dick, das 3. viermal so lang wie dick, die folgenden allmählich verkürzt und verengt, 9. noch dreimal so lang wie dick. Pronotum von oben nicht sichtbar. Mesonotum matt und fein chagrinirt, Parapsidenfurchen divergirend, im hinteren Drittel fehlend. Scutellum schimmernd, fast glatt, wenig länger als das Mesonotum, vorn ohne Querfurche. Mediansegment grob lederartig, allmählich abschüssig, ohne Felder noch Leiste. Flügel glashell, mit drei geschlossenen Basalzellen und einer geschlossenen Radialzelle, Stigma lanzettlich, Radius winkelig, distaler Teil 2—3-mal so lang wie der proximale; mit Spur einer rücklaufenden Ader, diese so lang wie der 1. Abschnitt des Radius und die Richtung des 2. Abschnittes fortsetzend; Analader entwickelt. Abdomen glatt, glänzend, depress. Länge: 3,5 mm.

Var. 1 ♂; Beine vollständig gelb; scutellum glatt und glänzend; Länge 2,5 mm.

Vorkommen. Seychellen-Inseln. Mahé: top of Mount Sebert, nearly 2000 feet, 16. I. 1909. Silhouette: forest above Mare aux Cochons, IX. 1908, 1 ♂ var.

Anteon Jurine, Nouv. méth. class. Hym. 1807, p. 302.

3. *Anteon oriphilus*, n. sp.

♂. Schwarz und glänzend; Mandibeln, Palpen, 1. Antennenglied, Coxæ und Beine gelb. Kopf quer, dicht aber sehr wenig grob punktiert, Augen kahl, den Hinterhauptsrand fast erreichend, hintere Ocellen so weit voneinander als von den Augen, doppelt so lang von den Augen als vom Hinterrand des Kopfes, Mandibeln mit 4 braunen Zähnen, äusserer Zahn am längsten. Maxillarpalpen 5- oder 6-gliedrig, den Hinterrand des Kopfes erreichend, Labialpalpen 2- oder 3-gliedrig. Antennen fein behaart, 1. Glied fast doppelt so lang wie das 2., dieses etwas kürzer als das 3., dieses sowie die folgenden doppelt so lang wie dick. Pronotum von oben nicht sichtbar. Mesonotum und Scutellum glatt und glänzend, Parapsidenfurchen im hinteren Drittel fehlend; Scutellum vorn mit einem Quereindruck; Mediansegment allmählich abfallend, matt und lederartig, mit einem grossen, glatten, glänzenden und gerandeten Mittelfeld, welches im vorderen Drittel stumpfwinkelig, in den zwei hinteren Winkeln allmählich nach hinten verengt ist; Metapleuren glatt, obere Hälfte sowie Mesopleuren matt und chagrinirt. Flügel glashell, Adern blass, Stigma braun, eine halbirte Ellipse darstellend, Radius winkelig gebrochen, proximaler Abschnitt doppelt so lang wie der distale, Basalis in das Ende der Subcostalis mündend. Abdomen glatt, glänzend und schwach depress. Länge: 2,5 mm.

Vorkommen. Seychellen-Inseln. Mahé: top of Mount Sebert, nearly 2000 feet, 16. I. 1909, 1 ♂.

II. **Bethylidæ.**

Parasierola Cameron, Trans. Ent. Soc. London, 1883, p. 197.

4. *Parasierola rostrata*, n. sp.

♂♀. Schwarz; Mandibeln, Antennen, Coxæ und Beine gelb, beim ♀ sind das distale Drittel der Antennen, die Coxæ und Femora braun bis schwarz. Kopf und Thorax fast glatt, kaum merklich chagrinirt, Kopf etwas länger als breit, Augen 2—3-mal so lang wie ihr Abstand vom Hinterrand des Kopfes, Clypeus stark gekielt, seitlich zusammengedrückt und schnabelartig über die Mandibeln hinaus verlängert. Antennen in beiden Geschlechtern gleichgestaltet, 3.—13. Glied ziemlich kuglig. Pronotum wenig länger als das Mesonotum, dieses so lang wie das Scutellum, Mediansegment matt, lederartig, mit einer glatten Mittellängslinie. Flügel glashell, Prostigma kleiner als das Stigma, beide schwarz, Radius schwach bogenförmig beim ♂, fast gerade und am Ende plötzlich eingekrümmt beim ♀, Median- und Submedianader sowie die Areola sehr blass. Analsegment beim ♀ griffelartig, mit vorstehendem Bohrer, beim ♂ mit zwei kurzen Lappen. Länge: 2 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons, plateau and forest above, IX. 1908, 1 ♂, 3 ♀. Mahé: Cascade Estate, about 1000 feet, I. 1909, 1 ♀.

Pristocera Klug, Beitr. z. Naturk. ii. 1810, p. 202.

1. Basalis nicht um ihre Länge vom Stigma entfernt ..... 5. *P. crucifera*, n. sp.
   Basalis wenigstens um ihre Länge vom Stigma entfernt ..... 2.
2. Mediansegment fein chagrinirt ..... 6. *P. remota*, n. sp.
   Mediansegment grob gefeldert ..... 7. *P. pallidimanus*, n. sp.

5. *Pristocera crucifera*, n. sp.

♂. Schwarz, glatt und glänzend; Mandibeln und die 2 ersten Antennenglieder rot, Coxæ und Beine gelb. Kopf etwas länger als breit, mit zerstreuten, mässig grossen Punkten, Augen fein behaart, kaum länger als ihr Abstand vom Hinterrand des Kopfes, hintere Ocellen etwas weiter vom Hinterrand als voneinander entfernt, dreimal weiter von den Augen als voneinander, Clypeus gekielt, Mandibeln fast halb so lang wie der Kopf, allmählich breiter, fünfzähnig, äusserer Zahn grösser, Palpen bis zur Mitte des Kopfes reichend. Scapus bogig, so lang wie das 3. Antennenglied, 2. Glied nicht länger als dick, 3.—13. dreimal so lang wie dick, Haare abstehend, so lang wie die Dicke der Glieder. Pronotum nach hinten allmählich erweitert, mit einem wenig deutlichen Quereindruck vor dem Hinterrand, so lang wie das Mesonotum; dieses mit 4 Längsfurchen; Querfurche des Scutellum tief und gerade; Mediansegment länglich, runzelig, lateral abgerundet, nicht gerandet, vorn mit einer kurzen Längsleiste. Flügel schwach angeraucht, Subcostalis von der Costalis wenig entfernt, Stigma linealisch, dreimal so lang wie breit, mit weissem Grund, Basalis schräg, etwas länger als ihr Abstand vom Stigma, Radialis dreimal so lang wie die Basalis, Medialis distal von den Basalzellen verlängert, die übrigen Adern der äussern Submedianzelle erloschen; eine weisse Längslinie entspringt nahe der Mitte der Basalis und verzweigt sich hinter der Mitte der Radialis, Vorderast am Grunde bogig, mit dem Distalende der Radialis durch ein weisses Kreuzchen verbunden, Hinterast ebenfalls mit bogigem Grund, durch eine weisse Transversalis mit der Analis verbunden. Femora wenig verdickt. Abdomen flach gedrückt. Länge: 3,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: forest above Mare aux Cochons, 2. IX. 1908, 1 ♂. Praslin: Côtes d'Or Estate, especially from Coco-de-Mer forest in the Vallée de Mai, XI. 1908, 1 ♂. Mahé: high damp forest at summit of Pilot, over 2000 feet, X.—XI. 1908, 2 ♂; Mare aux Cochons district, 1000—2000 feet, 26. I. 1909—2. II. 1909, 1 ♂; Cascade Estate, about 800 feet and in the forest above, from 1000—2000 feet, 1908 and 1909, 4 ♂.

6. *Pristocera remota*, n. sp.

♂. Schwarz; Mandibeln, die 5 ersten Antennenglieder, Coxæ und Beine rot. Kopf länglich, schimmernd, fast glatt, Mandibeln halb so lang wie der Kopf, mit 3—4 Zähnen, Augen kahl, so lang wie ihr Abstand vom Hinterrand des Kopfes. Scapus so lang wie die 2 folgenden Glieder zusammen, 2. Glied so lang wie dick, 3.—13. doppelt so lang wie dick, Behaarung kürzer als die Dicke der Glieder. Thorax wie bei voriger Art, ausgenommen dass das Mediansegment fein chagrinirt und seitlich gerandet ist, die Mittellängsleiste durchlaufend, Metapleuren glatt und glänzend. Flügel wie bei voriger Art, ausgenommen dass die Basalis kürzer ist als ihr Abstand vom Stigma, die beiden Zinken der weissen Längslinie am Grunde gerade und nicht bogig. Länge: 3,5 mm.

Vorkommen. Seychellen-Inseln. Mahé: Mare aux Cochons district, 26. I.—2. II. 1909, 1 ♂.

7. *Pristocera pallidimanus*, n. sp.

♂. Schwarz; die 3 oder 4 ersten Antennenglieder und die Tarsen lehmgelb. Kopf und Thorax wie bei voriger Art, Augen kahl, kaum länger als ihr Abstand vom Hinter-

rand, Flagellumglieder kaum länger als dick. Mediansegment grob gefeldert. Flügel dunkel. Geäder wie bei voriger Art. Abdomen flach gedrückt. Länge: 2,3 mm.

Vorkommen. Seychellen-Inseln. Mahé: high damp forest at summit of Pilot, over 2000 feet, X.—XI. 1908, 1 ♂.

Dissomphalus Ashmead, Bull. U. S. Nat. Mus. P. 45, 1893, p. 41.

Hintertibien vor dem Ende ausgerandet ..... 8. *D. excisicrus*, n. sp.

Hintertibien ohne Ausrandung ..... 9. *D. saxatilis*, n. sp.

8. *Dissomphalus excisicrus*, n. sp.

♂. Schwarz, matt und fein behaart; Mandibeln, Antennen ausgenommen das verdunkelte Distalende, Coxæ and Beine weisslichgelb. Kopf fast kreisrund, mit wenig dichten und mässig groben Punkten, Zwischenräume chagrinirt, Augen behaart, so lang wie ihr Abstand vom Hinterrand des Kopfes, hintere Ocellen etwas weiter vom Hinterrand als voneinander, doppelt so weit von den Augen als voneinander, Clypeus gekielt. Scapus so lang wie die 3 folgenden Glieder zusammen, 2.—13. Glied wenig länger als dick, fein behaart. Thorax dorsal punktiert und chagrinirt wie der Kopf; Mesonotum quer, so lang wie das Pronotum, Parapsidenfurchen fast parallel; Scutellum kürzer als das Mesonotum, vorn mit einer breiten Querfurche; Mediansegment quer, grob gerunzelt, mit einer Mittellängsleiste, seitlich nicht gerandet aber abgerundet und glatt, hinterer abfallender Teil des Mediansegmentes und Metapleuren feiner gerunzelt, ersterer mit einer Mittellängsleiste. Flügel schwach angeraucht, Subcostalis von der Costalis entfernt, Basalis so lang wie ihr Abstand vom Stigma, welches schmal, 2—3-mal so lang wie breit und am Grund weiss ist, Radialis stark bogig, dreimal so lang wie die Basalis, Postmarginalis der Radialis gleich, Nervulus von der Basalis distal entfernt, äussere Submedianzelle hinten offen. Vordere Femora mässig verdickt, hintere Tibien allmählich verdickt, vor der Spitze ventral plötzlich ausgerandet. Abdomen eirund, gewölbt, kürzer, als der Thorax, 2. Tergit vorn, beiderseits, lateral mit einem kreisrunden Grübchen. Länge: 4 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate about 800 feet, X. 1908—I. 1909, 1 ♂.

9. *Dissomphalus saxatilis*, n. sp.

♂. Schwarz; Mandibeln, die zwei ersten Antennenglieder, Coxæ und Beine hellgelb. Kopf und Thorax matt oder schwach schimmernd, mit wenig dichten und oberflächigen Punkten; Kopf etwas länger als breit, Augen behaart, um $\frac{1}{3}$ länger als ihr Abstand vom Hinterrand des Kopfes, Mandibeln linealförmig, mit 3—4 Zähnen. Antennenglieder 2—12 nicht länger als dick, 13. länger. Thorax wie bei voriger Art, Mediansegment so lang wie breit, lederartig, Mittellängsleiste nicht durchlaufend, Seiten nicht glatt. Flügel wie bei voriger Art, Postmarginalis aber nur halb so lang wie die Radialis, Nervulus mit der Basalis zusammenstossend, weisse Linien wie bei *Pristocera cruciferа*, jedoch

ist der Stiel der Gabel durch eine Querader mit der äusseren Submedianzelle verbunden. Hintere Tibien ohne Ausschnitt. Abdomen flach gedrückt, so lang wie der Thorax; 2. Tergit mit einem Wärzchen beiderseits vorn. Länge: 2 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1000 feet, and in the forest above, up to over 1000 ft., 6 ♂ (mostly I. and II. 1909).

Scleroderma Klug, Latr. Consid. géner. 1810, p. 314.

10. *Scleroderma seychellensis*, n. sp.

♀. Rötlichgelb, distale Hälfte der Antennen dunkel, Kopf und Abdomen, ausgenommen das 1. oder die 2 ersten Tergite, braun bis schwarzbraun. Kopf viereckig, um die Hälfte länger als breit, fein chagrinirt, mit zerstreuten Punkten; Augen fast punktförmig, so lang wie die Wange, $\frac{1}{6}$ des Abstandes vom Hinterrand des Kopfes erreichend; Ocellen fehlend. Antennenglieder 3—13 so dick wie lang. Thorax kaum breiter als die halbe Breite des Kopfes oder des Abdomens, glatt und glänzend; Pronotum länglich, Mesonotum eirund, Mediansegment doppelt so lang wie breit, gleichbreit, vorn bogig ausgeschnitten, hinten nicht abgestutzt sondern abgerundet. Flügel fehlend. Alle Tibien unbedornt. Abdomen lang gestreckt, hinten allmählich zugespitzt. Länge: 2—3 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons Plateau and jungle near by, VIII.—IX. 1908, 2 ♀; near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 1 ♀.

III. Ceraphronidæ.

Ceraphron Jurine, Nouv. méth. class. Hym. 1807, p. 303.

11. *Ceraphron saxatilis*, n. sp.

♂. Rot; Antennen schwarzbraun, ausgenommen der Grund des 1. Gliedes, eine Mittellängsbinde auf dem Mesonotum, Scutellum und hintere Hälfte des Abdomen schwarz. Kopf und Thorax schimmernd und ziemlich glatt, Kopf breiter als der Thorax, Augen dreimal so lang wie die Wangen, Stirn mit einem ziemlich grossen aber wenig tiefen Eindruck über den Antennen. Scapus dicker proximal als distal, 2. Glied fast kuglig, 3. länger als das 4., welches dreimal so lang wie dick ist, 10. noch über doppelt so lang wie dick, kürzer als das 11. Hinterer Abschnitt des Scutellum dreimal so lang wie die vorderen, die Furchen des Frenums stossen winkelig zusammen in einiger Entfernung vom Vorderrand. Flügel glashell, Radialis dreimal so lang wie die Marginalis. Abdomen so hoch wie breit, keglig, vorn gestreift. Länge: 1,5 mm.

Vorkommen. Seychellen-Inseln. Mahé: marshes on coastal plain at Anse aux Pins and Anse Royale, 12.—21. I. 1909, 1 ♂.

Conostigmus Dahlbom, Öfv. Svensk. Akad. Förh. xiv. 1857, p. 289.

12. *Conostigmus seychellensis*, n. sp.

♂. Schwarz; Scapus und Beine mit Ausnahme der Coxæ lehmgelb. Kopf und Thorax schimmernd, kaum chagrinirt; Kopf etwas breiter als der Thorax, Augen sehr kurz behaart, Ocellen ein Dreieck bildend, Stirn ohne Eindruck. Scapus walzenrund,

kaum oberhalb der Augenbasis entspringend, wenigstens so lang wie die zwei folgenden Glieder zusammen, 2. Glied fast kuglig, die folgenden walzenrund und kurz abstehend behaart, 3. 3—4-mal so lang wie dick, 4.—11. 2—3-mal so lang wie dick. Furchen des Frenum wenig vor dem Vorderrand des Scutellum winkelig zusammenstossend, hinterer Abschnitt des Scutellum länglich und fast flach. Flügel glashell, Distalende der Subcostalis verdickt, Stigma halbelliptisch, Radialis $1\frac{1}{2}$-mal so lang wie das Stigma. Abdomen kaum kürzer als der Thorax, dorsal etwas flach gedrückt, am Vorderrand des 1. Tergites gestreift. Länge: 2 mm.

Vorkommen. Seychellen-Inseln. Silhouette: low coconut-planted country near the coast, Pointe Étienne, 17. IX. 1908, 1 ♂.

IV. **Scelionidæ. A. Telenominæ.**

Telenomus Haliday, Entom. Mag. i. 1833, p. 271.

13. *Telenomus seychellensis*, n. sp.

♂♀. Schwarz; Mandibeln, Scapus und Beine, ausgenommen die Coxæ, dottergelb. Kopf breiter als der Thorax, hinten abgestutzt, glatt und glänzend, von oben und von vorn gesehen quer, Augen kahl, um ein Drittel länger als die Wangen, mit den Mandibeln durch eine tiefe Furche verbunden, Stirneindruck tief, fast kreisrund, von dem medialen Augenrand um seine ganze Breite entfernt, hintere Ocellen sowohl den Augenrand als den Hinterrand des Kopfes berührend. Mandibeln am Ende dreizähnig, Zähne stumpf. Antennen des ♀ 11-gliedrig. Scapus fast walzenrund, so lang wie die 4 folgenden Glieder zusammen, 2. Glied 2—3-mal so lang wie dick, kaum dicker aber nicht länger als das 3., 4. um die Hälfte länger als dick, 5. und 6. wenig länger als dick, Keule 5-gliedrig, ihre Glieder nicht gedrängt, nicht doppelt so dick wie die vorigen, so dick wie lang, ausgenommen das keglige Endglied. Antennen des ♂ 12-gliedrig, feinhaarig, 2.—5. Glied wenig länger als dick, das 2. umgekehrt keglig, 3.—5. walzenrund, 6.—11. fast kuglig, 12. länglich. Maxillarpalpen 2-gliedrig, beide Glieder länglich, Labialpalpen aus einem länglichen Glied bestehend. Thorax stark gewölbt, wenigstens so hoch wie lang, dorsal fein behaart und kaum merklich chagrinirt, Mesonotum quer, ohne Parapsidenfurchen, Scutellum halbkreisförmig. Flügel glashell, Marginalis punktförmig, Stigmaticalis schräg, lang, am Ende knopfförmig, Postmarginalis doppelt so lang wie die Stigmaticalis. Abdomen des ♀ kurz, so lang wie der Thorax, eirund, 1. Tergit ringförmig und gestreift, 2. fast bis zum Hinterende reichend, vorn gestreift, sonst glatt und glänzend; Abdomen des ♂ kürzer als der Thorax. Länge: 1—1,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: low coconut-planted country near the coast, Pointe Étienne, 17. IX. 1908, 1 ♀; Mare aux Cochons, plateau and forest above, IX. 1908, 2 ♀; near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 1 ♀. Mahé: from grass in cultivated country about 1000 feet, 2. XII. 1908, 1 ♀; Mare aux Cochons district, 1000—2000 feet, 26. I.—2. II. 1909, 10 ♀; Caseade Estate, 800—1500 feet, 1909, 3 ♂, 9 ♀.

14. *Telenomus myrmidon*, n. sp.

♂♀. Schwarz; Grund des Scapus heller, Beine ausgenommen die Coxæ schmutzig-weiss. Augen fein behaart. Das 2. Antennenglied des ♀ um die Hälfte länger als dick, 3. kaum länger als dick, 4.—6. nicht länger als dick. Antennen des ♂ wie bei voriger Art. Abdomen in beiden Geschlechtern kürzer als der Thorax, 2. Tergit nicht gestreift. Alles übrige wie bei voriger Art. Länge: 0,8 mm.

Vorkommen. Seychellen-Inseln. Mahé: country above Port Glaud, about 500—1000 feet, 5. XI. 1908, 1 ♀; Cascade Estate, about 800—1500 feet, X. 1908—III. 1909, 8 ♂, 9 ♀.

15. *Telenomus mahensis*, n. sp.

♂♀. Schwarz; Mandibeln rot, Beine mit Ausnahme der Coxæ, und Scapus des ♀ lehmgelb, verdickter Teil der Femora und der Tibien des ♂ gebräunt. Kopf und Thorax matt und fein lederartig, Augen kahl. Maxillarpalpen 2-gliedrig, Labialpalpen aus 1 Glied bestehend, dieses nicht länger als dick, am Ende mit zwei oder drei kräftigen Borsten. Beim ♀ ist das 2. Antennenglied doppelt so lang wie dick, 3.—7. fast walzenförmig, das 7. etwas dicker als das 6., Keule 4-gliedrig, die 3 ersten Glieder wenig quer, das 4. eirund; an einer Antenne waren das 6. und 7. Glied zu einem einzigen länglichen Glied verwachsen. Beim ♂ ist das 2. Glied kuglig, 3. und 4. dreimal so lang wie dick, die folgenden allmählich verkürzt, das 11. noch deutlicher länger als dick, kürzer als das 12. Flügel glashell, Geäder wie bei vorigen Arten. Abdomen länglich, so lang wie der übrige Körper, 1. Tergit gestreift, doppelt so breit wie lang, 2. am Grunde gestreift, $1\frac{1}{2}$-mal so lang wie breit, die Mitte des Abdomen weit überragend, die 4 oder 5 folgenden Tergite sehr kurz, allmählich schmaler werdend, Bohrer lang vorstehend. Länge: 0,8—1 mm.

Vorkommen. Seychellen-Inseln. Mahé: country above Port Glaud, about 500—1000 feet, 5. XI. 1908, 1 ♀; Mare aux Cochons district, about 1500 feet, 26. I.—2. II. 1909, 1 ♂; Cascade Estate, 800—1500 feet, 1909, 1 ♀.

B. Bæinæ.

Bæus Haliday, Entom. Mag. i. 1833, p. 270.

16. *Bæus curvatus*, n. sp.

♀. Schwarz; Gesicht vorn bräunlich, Antennen, Coxæ und Beine gelb, Distalende der Antennenkeule dunkler. Körper glatt, glänzend, dorsal vom Vorderende des Kopfes bis zum Hinterende des Abdomen bogig gewölbt. Kopf viel breiter als der Thorax, etwas quer, hinten bogenförmig ausgeschnitten, Ocellen fehlend, Augen kahl, doppelt so lang wie die Wangen, fast den Hinterrand des Kopfes erreichend, Scheitel und Stirn gewölbt. Antennen wie bei *Bæus castaneus*. Thorax quer, durch eine wenig deutliche, kaum hinter der Mitte befindliche Naht in zwei Teile geteilt. Flügel fehlend. Abdomen etwas breiter als der Thorax, so lang wie der übrige Körper, am Grunde so breit wie in der Mitte und von der Dorsalfläche des Thorax nur durch eine feine Naht getrennt. Länge: 0,8 mm.

Vorkommen. Seychellen-Inseln. Silhouette: high country near Mont Pot-à-eau, VIII. 1908, 1 ♀.

PARABÆUS, n. g. (Plate **2**, fig. 3).

Wie bei *Bæus* sind die Antennen 7-gliedrig, der Thorax ohne Scutellum, das Abdomen seitlich schneidig und das 1. Tergit reicht fast bis zum Hinterende des Abdomen; von *Bæus* unterscheidet sich aber *Parabæus* durch die Antennenkeule, welche aus 4 verwachsenen Gliedern besteht, durch den nicht bogig gekrümmten Körper, durch das deutliche Pronotum und durch das Abdomen, welches nicht blos durch eine Naht von der Dorsalfläche des Thorax getrennt ist. Die Type ist:

17. *Parabæus ruficornis*, n. sp. (Plate **2**, fig. 3).

♀. Schwarz, schimmernd; Antennen, Coxæ und Beine rot. Kopf so breit wie das Abdomen, etwas quer, gewölbt, hinten kaum bogig ausgeschnitten, nicht gerandet, Scheitel und Stirn dicht punktiert, Augen kahl, den Hinterrand des Kopfes fast erreichend, Ocellen ein Dreieck bildend, die hinteren berühren den Augenrand. Scapus länger als die 5 folgenden Glieder zusammen, 2. Antennenglied wenigstens doppelt so lang wie dick, 3., 5. und 6. kuglig oder etwas quer, 4. ziemlich walzenrund, wenig länger als dick, das 7. bildet eine grosse, dicke, spitz eirunde Keule, welche durch drei schräge, wenig deutliche Nähte in 4 Glieder geteilt ist. Thorax etwas länger als hoch, schmaler als der Kopf, fast walzenrund, noch feiner punktiert als der Kopf, im vorderen Viertel durch eine quere, mitten winkelige Naht in einen Prothorax und in einen Mesothorax geteilt, Scutellum, Metanotum und Mediansegment, sowie die Flügel fehlend. Femora gekeult, hintere Tarsen wenigstens so lang wie die Tibien. Abdomen so lang wie der übrige Körper, glatt, glänzend, dorsal etwas flach gedrückt, ventral weniger, elliptisch, Seitenrand schneidig, 1. Tergit die 4 vorderen Fünftel des Abdomen einnehmend, die 3 oder 4 folgenden Tergite sehr kurz. Länge: 0,9 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, 1909, 1 ♀.

CERATOBÆUS Ashmead, Bull. U. S. Nat. Mus. P. 45, 1893, p. 175.

18. *Ceratobæus insularis*, n. sp.

♀. Schwarz; Antennen und 1. Segment des Abdomen ausgenommen das Horn, gelb, Beine lehmgelb, Coxæ und Femora schwarzbraun. Kopf und Thorax schimmernd und fein lederartig; Kopf etwas breiter als der Thorax, Augen kahl. Das 2. Antennenglied ist dick, umgekehrt keglig, $1\frac{1}{2}$-mal so lang wie dick, 3.—6. sehr schmal, kuglig oder quer, Keule spitz ellipsoïdal, so lang wie die 5 vorigen Glieder zusammen, ohne Spur einer Teilung. Thorax etwas höher als lang, stark gewölbt, ohne Parapsidenfurchen, Metanotum ohne Zähne, senkrecht abfallend, wie auch das Mediansegment. Flügel glashell, Marginalis in Gestalt eines dicken Punktes, Postmarginalis fehlend, Stigmaticalis schräg, lang, am Ende geknöpft. Abdomen, flach gedrückt, spindelförmig, etwas länger als der übrige Körper, viel tiefer als die Fläche des Mesonotum liegend, 1. Tergit gestreift, mit einem schräg nach vorn gerichteten Horn, welches länger als dick ist und die Fläche des Mesonotum kaum überragt, 2. Tergit in der vorderen Hälfte gestreift,

3. am längsten, glatt und glänzend, wie die folgenden, 4.—7. Glied ein Dreieck bildend, welches etwas länger als breit ist. Länge: 1 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, 1909, 1 ♀.

ODONTACOLUS, n. g. (Plate **2**, fig. 4).

Von *Ceratobæus* durch das zweizähnige Metanotum, den länglichen Kopf, die Anwesenheit einer Postmarginalis und das anders gestaltete Horn des 1. Tergites zu unterscheiden. Die Type ist:

19. *Odontacolus longiceps*, n. sp. (Plate **2**, fig. 4).

♀. Kopf schwarz, Mandibeln lehmgelb, Scapus und Antennenkeule schmutzigweiss, 2.—6. Antennenglied braun, Thorax braun, dorsal dunkler, Coxæ, Beine and Abdomen gelb, Tergite seitlich braun, das Horn hellgelb. Kopf breiter als der Thorax, von oben gesehen sehr quer, von vorn gesehen länger als breit, hinten bogig ausgeschnitten, glatt und glänzend, Augen fein behaart, den Hinterrand des Kopfes erreichend, so lang wie die Wangen, mit der Mandibel durch eine Furche verbunden, Stirn ohne Eindruck, Ocellen ein Dreieck bildend, die hinteren berühren fast den Augenrand. Palpen nicht vorstehend. Scapus walzenrund, 2. Glied fast doppelt so lang wie dick, dicker als die folgenden, 3. so lang wie dick, 4.—6. quer, 3.—6. sehr schmal, Keule spitz ellipsoïdal, ohne Spur einer Teilung, so lang wie die 5 vorigen Glieder zusammen. Thorax wenig länger als hoch, Pronotum von oben kaum sichtbar, hinten bogig ausgeschnitten, Mesonotum gewölbt, quer, ohne Parapsidenfurchen und, sowie das Scutellum fein punktiert, Scutellum quer, hinten abgerundet, Metanotum mit 2 dreieckigen Zähnen, die um mehr als ihre Breite voneinander abstehen. Flügel schwach getrübt, kurz bewimpert, Subcostalis den Vorderrand fast berührend, Marginalis punktförmig, Stigmaticalis schräg, lang, am Ende knopfförmig, Postmarginalis so lang wie die Stigmaticalis, Vorderrand nicht bewimpert, nur fein behaart. Abdomen flach gedrückt, lang elliptisch, Seitenrand schneidig, 1. Tergit mit einem senkrechten, walzenförmigen Horn, welches höher als dick ist, hinter dem Horn längsgestreift, 2. Tergit nur vorn gestreift, sonst glatt und glänzend, wie die folgenden, allmählich breiter, etwas kürzer als das 3., welches das längste ist, die folgenden sehr kurz. Länge: 1,5 mm.

Vorkommen. Seychellen-Inseln. Mahé: low country, 1 ♀.

ACOLOIDES Howard, Insect Life ii. 1890, p. 269.

20. *Acoloides unicolor*, n. sp.

♀. Ganz blassgelb, nur die Augen und die Ocellen schwarz. Kopf viel breiter als der Thorax, von vorn gesehen etwas quer, von oben gesehen doppelt so breit wie lang, hinten bogig ausgeschnitten, glatt und glänzend, Augen fein behaart, kaum länger als die Wangen, Ocellen ein Dreieck bildend, die hinteren berühren fast die Augen, Scheitel doppelt so breit wie ein Auge, 2. Antennenglied dicker als die folgenden, doppelt so lang wie dick, 3.—6. sehr dünn, 3. so lang wie dick, 4.—6. kuglig oder quer, Keule länger als die 4 vorigen Glieder zusammen, spitz ellipsoïdal, ohne Spur einer Teilung. Pronotum sehr schmal, hinten bogig ausgeschnitten, Mesonotum

und Scutellum glatt, schimmernd, Parapsidenfurchen fehlend, Mediansegment quer, viereckig, kürzer aber wenigstens so breit wie das Scutellum. Flügel angeraucht, proximale Hälfte glashell, Nähe der Stigmaticalis dunkler und fast eine Querbinde bildend, Vorder- und Hinterrand lang bewimpert, Subcostalis vom Vorderrand entfernt, Marginalis einen dicken Punkt bildend, Stigmaticalis lang, schräg, am Ende knopfförmig, Postmarginalis und Basalis fehlend, Vorderrand bis zur Marginalis lang bewimpert. Petiolus walzenförmig, etwas länger als dick, gestreift, ein Drittel der Breite des 2. Tergites erreichend; Abdomen wenig länger als breit, fast kreisrund, so breit wie der Thorax, glatt und glänzend, flach gedrückt, Seitenrand schneidig. Länge: 0,8 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, 1909, 1 ♀.

Acolus Förster, Hymen. Stud. ii. 1856, pp. 100 & 102.

Kopf matt und fein lederartig .....21. *A. zonatus*, n. sp.

Kopf glatt und glänzend .....22. *A. lucidiceps*, n. sp.

21. *Acolus zonatus*, n. sp.

♂♀. Schwarz; Beine lehmgelb, die Coxæ ausgenommen, Femora gebräunt, Mandibeln rot, Scapus des ♂ und Antennen des ♀ bräunlichgelb, 1. Segment des Abdomen gelb. Kopf wenig breiter als der Thorax, matt und fein lederartig, hinten schwach bogenförmig ausgeschnitten, Augen fein behaart, etwas länger als die Wangen, mit den Mandibeln durch eine Furche verbunden, Mandibeln fast bis zur Mitte dreispaltig, die Lappen zugespitzt. Maxillarpalpen zweigliedrig, Labialpalpen aus einem warzenförmigen Gliede bestehend. Antennen des ♀ 7-gliedrig, 2. und 3. Glied länger als dick, 4.—6. kuglig oder quer, Keule so lang wie die 5 vorigen Glieder zusammen, ohne Spur einer Teilung, ellipsoïdal. Scapus des ♂ so lang wie die drei folgenden Glieder zusammen, 2. und 3. Glied fast gleich, 1½-mal so lang wie dick, 4.—11. kuglig, 12. keglig, fast doppelt so lang wie dick. Thorax so lang wie hoch, matt oder schimmernd, fein chagrinirt, ohne Parapsidenfurchen. Flügel schwach getrübt, Marginalis einen dicken Punkt darstellend, Postmarginalis fehlend, Stigmaticalis lang, schräg, am Ende knopfartig verdickt und von einem bräunlichen Streifen durchkreuzt. Abdomen flach gedrückt, eirund, hinten breit abgerundet, 1. Tergit wenig breiter als lang, fein längsgestreift, 2. nach hinten allmählich breiter werdend, vorn gestreift, hinten, sowie die folgenden Tergite, fein lederartig, 3. am längsten. Länge: 0,8—1 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, 1909, 2 ♂, 1 ♀.

22. *Acolus lucidiceps*, n. sp.

♂♀. Schwarz; Mandibeln rot, beim ♂ sind der Scapus, das 1. Tergit und die Beine lehmgelb, mit Ausnahme der Coxæ, beim ♀ sind die Antennen und die Beine, ausgenommen die Coxæ, braungelb. Kopf glatt und stark glänzend, nicht breiter als der Thorax. Beim ♂ ist das 3. Antennenglied nicht länger als dick, das 2. ein wenig

länger als dick. Flügel ohne braunen Streifen. Abdomen fast kreisrund, 1. Tergit stark quer. Alles übrige wie bei voriger Art. Länge: 0,8 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, 1909, 1 ♂, 2 ♀.

C. Scelioninæ.

Hadronotus Förster, Hymen. Stud. ii. 1856, pp. 101 & 105.

Körper schwarz .....23. *H. saxatilis*, n. sp.

Körper rot, Kopf und hintere Hälfte des Abdomens schwarz.....
24. *H. festivus*, n. sp.

23. *Hadronotus saxatilis*, n. sp.

♂♀. Schwarz; Mandibeln, Scapus, Kniee, Tibien und Tarsen lehmgelb, 2.—6. Antennenglied des ♀ braun. Körper gedrungen. Kopf etwas breiter als der Thorax, von oben gesehen quer, hinten bogig ausgeschnitten, von vorn gesehen so hoch wie breit, matt und sehr fein lederartig, Augen kahl, um $\frac{1}{3}$ länger als die Wangen, mit den Mandibeln durch eine Furche vereinigt, die hinteren sind vom Augenrand und vom Hinterrand des Kopfes um ihren Durchmesser entfernt. Mandibeln gleichbreit, am abgestutzten Ende dreizähnig, die Zähne stumpf und nicht länger als dick. Maxillarpalpen aus zwei länglichen Gliedern zusammengesetzt, Labialpalpen aus 1 länglichen Gliede bestehend*. Antennen 12-gliedrig; 2. Glied beim ♂ kuglig, 3. etwas länger als dick, 4.—11. fast walzenrund, so dick wie lang, 12. länglich, 5. nicht verdickt; Scapus des ♀ so lang wie die 6 folgenden Glieder zusammen, 3. Glied so lang wie das 2., aber schmaler, wenigstens doppelt so lang wie dick, 4. und 5. nicht länger als dick, 6. etwas verdickt, fast kuglig, 6.—12. gedrängt und eine spindelförmige Keule bildend, 7.—11. Glied kaum quer, 6. und 12. wenigstens so lang wie dick. Thorax kaum länger als hoch, vorn abgerundet und nicht abgestutzt, dorsal matt und grob lederartig, Mesonotum gewölbt, stark quer, ohne Parapsidenfurchen, Scutellum quer, hinten abgerundet. Flügel glashell, Marginalis punktförmig, Postmarginalis $1\frac{1}{2}$-mal so lang wie die Stigmaticalis, diese schräg, lang, am Ende geknöpft. Abdomen kaum länger als breit, fast im gleichen Niveau mit dem Mesonotum, matt, fein lederartig, Hinterrand der Tergite glatt und glänzend, Seitenrand schneidig. 1. Tergit gestreift, so lang wie das 3., das 2. etwas länger als das 3., die 4 letzten sehr kurz. Länge: 1 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, I.—III. 1909, 9 ♂, 6 ♀. Silhouette: Mare aux Cochons, plateau and near by, IX. 1908, 2 ♂, 1 ♀.

24. *Hadronotus festivus*, n. sp.

♂. Rot; Kopf, Antennen und hintere Hälfte des Abdomen schwarz, Grund des Scapus lehmgelb. Kopf und Thorax matt, fein behaart und fein chagrinirt, Kopf von oben gesehen viel breiter als lang, von vorn gesehen wenig quer, etwas breiter als der Thorax, hinten bogig ausgeschnitten, Augen kahl, etwas länger als die Wangen,

* Nach Ashmead sind die Mandibeln bei *Hadronotus* 2-zähnig, die Maxillarpalpen 4-gliedrig und die Labialpalpen 3-gliedrig.

hintere Ocellen von den Augen entfernt, Gesicht vorn und Wangen gestreift. Antennen fein behaart, 1. Glied etwas kürzer als die vier folgenden zusammen, 2. fast kuglig, 3. kaum länger als das 4., 3.—12. walzenrund, wenig länger als dick, das 5. kaum verdickt. Thorax etwas länger als hoch, Pronotum von oben kaum sichtbar, hinten bogig ausgeschnitten, Mesonotum stark gewölbt, quer, ohne Parapsidenfurchen, Scutellum halbkreisförmig, Metanotum und Mediansegment senkrecht abfallend. Flügel glashell, kurz bewimpert, Subcostalis den Vorderrand bildend, im distalen Drittel vom Vorderrand entfernt, Marginalis einen dicken Punkt bildend, Stigmaticalis lang, schräg, am Ende knopfförmig, halb so lang wie die Postmarginalis. Abdomen viel tiefer liegend als das Mesonotum, flach gedrückt, sitzend, um die Hälfte länger als breit, so breit wie der Thorax, und fast so lang wie der übrige Körper, 1. und 2. Tergit längsgestreift, das 1. mehr als doppelt so breit wie lang, das 2. ist das längste und überragt wenig die Mitte des Abdomen, die 4 folgenden glatt und allmählich verkürzt, Seitenrand schneidig. Länge: 1,2 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, 1909, 1 ♂.

Psiloteleia Kieffer, Serphiden &c. von Madagaskar; in Voeltzkow, Reise in Ostafrika, Vol. 2. 1910, p. 530.

25. *Psiloteleia atra*, n. sp. (Text-fig. 1.)

♂♀. Schwarz; Mandibeln rot, Coxæ, Beine und, beim ♂, der Scapus gelb, die 11 übrigen Glieder braun, Antennen des ♀ bräunlich, Grund des Scapus gelb, Keule schwarz. Kopf etwas quer, hinten abgerundet, nicht gerandet und nicht bogig ausgeschnitten, Scheitel und Schläfe matt, Stirn glatt und glänzend, hintere Ocellen von den Augen um ihren Durchmesser entfernt; die beiden Mandibeln am Ende in zwei ungleichgrosse Zähne geteilt (Fig. 1). Maxillarpalpen aus 2 länglichen Gliedern zusammengesetzt, Labialpalpen aus einem länglichen Glied bestehend, dieses am Ende mit drei kräftigen Borsten. Scapus des ♂ etwas länger als die zwei folgenden Glieder, 2.—5. Glied $2\frac{1}{2}$-mal so lang wie dick, das 5. in der Mitte zahnartig vorstehend, 6.—11. kaum doppelt so lang wie dick, 12. länger als das vorhergehende. Beim ♀ ist das 2. Antennenglied dicker als das 3., aber nicht länger, 3. doppelt so lang wie dick, 4. und 5. wenig länger als dick, alle drei walzenrund, 6. und 7. kuglig, die 5 folgenden stark verdickt, gedrängt, dreimal so breit wie lang, ausgenommen das kurze, keglige Endglied. Thorax kaum schmaler als der Kopf, $1\frac{1}{2}$-mal so lang wie hoch, wenig gewölbt, glänzend und fein punktiert, Pronotum von oben nicht sichtbar; Parapsidenfurchen durchlaufend und divergirend, Scutellum quer, hinten abgerundet. Flügel schwach getrübt, kurz bewimpert, Subcostalis dem Vorderrand sehr genähert, Marginalis kürzer als die Stigmaticalis, diese halb so lang wie die Postmarginalis, schräg, lang, am Ende knopfartig verdickt; Hinterflügel mit 2 Frenalhäckchen. Abdomen spatelförmig, flach, so lang wie der übrige Körper, 2—3-mal so lang wie breit, Tergite quer, ausgenommen das 1., die beiden ersten gestreift, die 5 folgenden glatt und glänzend, das 1. so lang wie breit, etwas kürzer als das 2., 3. das längste, kürzer als die zwei ersten zusammen,

Fig. 1. Mandibel von *Psiloteleia atra*, n. sp.

die 4 folgenden kurz, Hinterende beim ♂ abgerundet, beim ♀ dreieckig, mit vorstehendem Bohrer. Länge: 1,8 mm. Körper schlank.

Vorkommen. Seychellen-Inseln. Silhouette: near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 1 ♂, 1 ♀. Mahé: Cascade Estate, about 800 feet or over, X. 1908—I. 1909, 1 ♂.

Oriscelio, n. g. (Plate **2**, fig. 6).

Dieses neue Genus ist von *Scelio* nur durch die Form des Scutellums zu unterscheiden.

26. *Oriscelio seychellensis*, n. sp. (Plate **2**, fig. 6).

♀. Schwarz; Mandibeln und Scapus braun, ventrale Seite des Scapus heller, Antennenglieder 2.—6. und Beine, mit Ausnahme der Coxæ, gelb. Kopf grob netzartig gerunzelt, Stirn mit einem glatten, glänzenden, oben bogigen und gerandeten Eindruck, der den medialen Augenrand fast berührt und die Mitte der Augen erreicht; Augen kahl, doppelt so lang wie die Wangen, mit der Mandibel durch eine Furche vereinigt; Mandibeln lang, am Ende mit 2 spitzen Zähnen. Maxillarpalpen 3-gliedrig, 1. Glied das längste, 2. das kürzeste, wenig länger als dick, Labialpalpen 2-gliedrig, beide Glieder fast doppelt so lang wie dick. Das 2. Antennenglied ist wenig länger als dick, 3. etwas kürzer als das 2., 4.—6. quer und gleichdünn, die 6 folgenden bilden eine abgesetzte Keule, deren 1. Glied das längste ist, die 4 folgenden doppelt so breit wie lang. Thorax dorsal mit groben, netzartig verzweigten Längsrunzeln; Prothorax vorn abgestutzt, Schultern rechtwinkelig; Parapsidenfurchen fehlend; Scutellum so lang wie breit, Hinterrand zweilappig, mit einem bogenförmigen, wenig tiefen Ausschnitt; Mediansegment so breit wie der Thorax an den Tegulæ, Hinterecken mit einem spitzen Zahn; Pleuren gerunzelt. Flügel kaum getrübt, Subcostalis von der Costalis entfernt, Stigma kreisrund, fast punktförmig, den Vorderrand nicht erreichend, Stigmaticalis braun, kaum schräg, am Ende knopfförmig verdickt, Radius durch eine Spur angedeutet. Beine ziemlich kahl. Abdomen gleichbreit, mit 6 queren und grob längsfestreiften Tergiten, Zwischenräume der Längsstreifen gerunzelt, schmaler Hinterrand der Tergite glatt, 2. Tergit kaum länger als das 1. oder als das 3., das 1. so breit wie das 2.; Sternite fast glatt. Länge: 3,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: high country near Mont Pot-à-eau, VIII. 1908, 1 ♀; Mare aux Cochons and forest above, IX. 1908, 2 ♀. Mahé: high damp forest at summit of Pilot, over 2000 feet, X.—XI. 1908, 1 ♀; high forest near Morne Blanc, XI. 1908, 1 ♀; from grass in cultivated country, about 1000 feet, 11. XII. 1908, 1 ♀; top of Mount Sebert, nearly 2000 feet, 16. I. 1909, 1 ♀; Mare aux Cochons district, 1000—2000 feet, 26. I. 1909—2. II. 1909, 6 ♀; Cascade Estate, about 1000 feet, I.—III. 1909, 7 ♀; Cascade, cultivated country near sea-level, 20. II. 1909, 1 ♀.

ENNEASCELIO, n. g. (Plate 2, fig. 5).

Diese Gattung unterscheidet sich von *Scelio* nur durch die Gestalt des Prothorax und durch die 9-gliedrige Antennenkeule, letzteres Merkmal kommt bei keiner anderen Gattung vor, ausgenommen bei *Roena* Cam.

27. *Enneascelio exaratus*, n. sp. (Plate 2, fig. 5).

♀. Glänzend schwarz; Femora schwarzbraun, Tibien und Tarsen braun, Trochanteren, Grund der Femora und der Tibien sowie die Gelenke der Tarsenglieder weisslich oder gelblich. Kopf netzartig gerunzelt, hinter den Ocellen mit groben, queren, bogigen Streifen, über den Antennen mit einer glatten, glänzenden Stelle, beiderseits dieser Stelle ist die Stirn grob fächerartig gestreift; Augen kahl, doppelt so lang wie die Wangen, mit der Mandibel durch eine Furche vereinigt; Mandibel zweizähnig. Das 2. Antennenglied fast doppelt so lang wie dick, 3. kaum länger als das 2., die 9 folgenden dicht gedrängt, quer, eine dicke, abgesetzte Keule bildend, 6.—11. Glied gleichdick, 2—3-mal so dick wie lang. Prothorax vorn nicht abgestutzt, wie bei *Scelio*, aber allmählich halsartig verengt, hinten in der Mitte ist das Pronotum tief winkelig ausgeschnitten und kurz linienförmig, eine schräge Leiste geht von dieser Linie aus und trennt die Seiten des Pronotum von der halsartigen Einschnürung des Prothorax. Mesonotum mit durchlaufenden Längsleisten, die seitlichen etwas verästelt, Zwischenräume glatt und glänzend, Parapsidenfurchen fehlend; Scutellum stark gewölbt, netzartig gerunzelt oder fingerhutartig punktiert; Metanotum halbkreisförmig, fast lamellenartig; Mediansegment unbedornt, längsgerieft, jederseits mit einem dichten silberweissen Haarfleck; Pleuren gerunzelt, Propleuren oben glatt. Flügel stark angeraucht, proximal gelblich, Subcostalis vom Vorderrand entfernt, Stigma fast dreieckig, Stigmaticalis braun, kaum schräg, Radialis durch eine bräunliche Spur angedeutet, 4—5-mal so lang wie die Stigmaticalis, vor dem Rand aufhörend. Beine unbehaart. Abdomen mit 6 queren Tergiten, die 5 ersten grob längsgerieft, Zwischenräume fein chagrinirt und glänzend, das 6. sehr klein, fingerhutartig punktiert, die 3 ersten allmählich länger und breiter, 4. kaum kürzer als das 3.; 1. und 2. Sternit netzartig, die folgenden mitten glatt, seitlich gestreift, ihr Vorderrand mit einer Querreihe von Punkten. Länge: 6 mm.

Vorkommen. Seychellen-Insln. Silhouette: Mare aux Cochons Plateau and forest above, IX. 1908, 2 ♀.

MACROTELEIA Westwood, Proc. Zool. Soc. London, iii. 1835, p. 70.

1. Das 4. Antennenglied des ♀ wenigstens doppelt so lang wie dick, das 5. um die Hälfte länger als dick .....29. *M. mahensis*, n. sp.
   Das 4. Antennenglied des ♀ kaum länger als dick, 5. nicht länger als dick .....2.

2. Tergite 2—4 des ♀ doppelt so lang wie breit .....28. *M. versicolor*, n. sp.
   Tergite 2—4 des ♀ um ein Drittel länger als breit.....30. *M. flavigena*, n. sp.

28. *Macroteleia versicolor*, n. sp. (Plate 3, fig. 7).

♂♀. Das ♂ ist schwarz, 1. und 2. Antennenglied, Coxæ und Beine rotgelb; ♀ rot, Kopf und Antennen schwarz, ausgenommen die 2 ersten Glieder, welche gelb sind, und die 3 folgenden, welche braun sind, Mesonotum, 1. Tergit und vorletztes, sowie das letzte Segment schwarzbraun, Coxæ und Beine blassrot. Kopf und Thorax schwach feinhaarig, matt, mit mässig groben und ziemlich dichten Punkten, Kopf kaum quer, etwas breiter als der Thorax, hinten nicht gerandet sondern abgerundet, Augen kahl, doppelt so lang wie die Wangen, mit der Mandibel durch eine Furche verbunden, Stirn mit einem glatten, schmalen, nicht gerandeten Eindruck, welcher die Mitte der Augen erreicht, hintere Ocellen den Augenrand berührend. Antennen 12-gliedrig, Scapus beim ♀ fast so lang wie die 4 folgenden Glieder zusammen, 2. Glied doppelt so lang wie dick, 3. länger als das 2., aber schmaler, 4. um $\frac{1}{3}$ länger als dick, 5. nicht länger als dick, 6. etwas quer und schwach verdickt, die 6 folgenden gleichdick, die Keule bildend, gedrängt, etwas quer, ausgenommen das eirunde Endglied; 2. Glied beim ♂ kaum kürzer als das 3., doppelt so lang wie dick, 3. walzenrund, schmaler als das 2., 4.—11. kaum länger als dick, fast walzenrund, am Grunde abgerundet, fein behaart, das 5. schwach verdickt, am Grunde etwas bogig, 12. länglich. Thorax dorsal fast flach, Pronotum mitten linienförmig, hinten tief winkelig ausgeschnitten; Mesonotum etwas länger als breit, Parapsidenfurchen durchlaufend, vorn divergirend; Scutellum quer, hinten abgerundet, Pleuren fast glatt und glänzend. Flügel glashell, beim ♀ die Mitte des Abdomen erreichend, kurz gewimpert, Marginalis um die Hälfte länger als die Stigmaticalis, Postmarginalis $2\frac{1}{2}$-mal so lang wie die Marginalis, Stigmaticalis schräg, ziemlich lang, am Ende knotenförmig. Abdomen des ♀ $2\frac{1}{2}$-mal so lang wie der übrige Körper, spindelförmig, flach, mit 6 Tergiten, alle Tergite länglich, grob längsgestreift, Zwischenräume quergerunzelt, 5. und 6. Tergit schwächer gestreift, die 3 vorderen Tergite allmählich verlängert, das 1. um die Hälfte länger als breit, 2.—4. doppelt so lang wie breit, 5. und 6. eine lange Spitze bildend, das 5. mehr als 2-mal so lang wie breit, kürzer als das 6., welches stark von der Seite zusammengedrückt ist. Abdomen des ♂ doppelt so lang wie der übrige Körper, fast linealisch, hinten verengt, mit 7 Tergiten, die 3 vorderen allmählich verlängert, das 1. kaum länger als breit, 3. und 4. doppelt so lang wie breit, das 7. sehr kurz. Länge: 4—5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: low coconut-planted country near the coast, Pointe Étienne, 17. IX. 1908, 1 ♀. Mahé: near Morne Blanc, 1 ♀; from grass in cultivated country, about 1000 feet, 11. XII. 1908, 2 ♂; Port Victoria, XII. 1908, 1 ♂; low country, 1 ♂; marshes on coastal plain at Anse aux Pins and Anse Royale, 19.—21. I. 1909, 1 ♀; Cascade, cultivated country near sea-level, 20. II. 1909, 2 ♂; Cascade Estate, about 800—1000 feet, X. 1908—III. 1909, 2 ♂, 1 ♀; Mare aux Cochons district, 1000—2000 feet, 26. I. 1909—2. II. 1909, 1 ♀.

29. *Macroteleia mahensis*, n. sp.

♀. Gelbrot, Coxæ und Beine heller, die 6 distalen Antennenglieder, breiter Seitenrand des Mesonotum, Metanotum, Mediansegment und Abdomen schwarz. Kopf und

Thorax wie bei voriger Art, Mandibeln gleich, mit drei schwarzen Zähnen. Scapus kaum länger als die zwei folgenden Glieder, 3. Glied dreimal so lang wie dick, etwas länger als das 2., 4. dem 2. gleich, wenigstens doppelt so lang wie dick, 5. um die Hälfte länger als dick, 6. so dick wie lang, Keulenglieder gedrängt und quer, ausgenommen das Endglied. Hinterrand des Scutellum mit einer Punktreihe. Flügel glashell, das Endviertel des Abdomen erreichend, Postmarginalis fast doppelt so lang wie die Marginalis, sonst wie bei voriger Art. Abdomen spindelförmig, doppelt so lang wie der übrige Körper, flach, netzartig gerunzelt oder fingerhutartig punktiert, ausgenommen das längsgestreifte 1. Tergit, die 3 ersten Tergite etwas länger als breit, 4. so lang wie breit, 5. und 6. eine Spitze bildend, das 5. etwas quer, das 6. länger als das 5. und stark seitlich zusammengedrückt. Länge: 3,5 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1000 feet, I. 1909, 2 ♀.

30. *Macroteleia flavigena*, n. sp.

♀. Schwarz, vorderer Teil der Stirne, Wangen, vordere Hälfte der Schläfen, Mandibeln, Scapus, Coxæ und Beine gelb, Sternum und Pleuren bräunlich, Abdomen dorsal braun bis braunschwarz. Kopf und Thorax matt und punktiert, gestaltet wie bei voriger Art; 3. Antennenglied schmaler als das 2., walzenrund, wenigstens doppelt so lang wie dick, 4. kaum länger als dick, 5. nicht länger als dick, 6. etwas quer, Keule wie bei vorigen Arten. Flügel glashell, das Enddrittel des Abdomen erreichend, Marginalis um die Hälfte länger als die Stigmaticalis, Postmarginalis um die Hälfte länger als die Marginalis. Abdomen spindelförmig, schmaler als der Thorax, doppelt so lang wie der übrige Körper, dorsal längsgerunzelt und netzartig, 1. und 5. Tergit kaum länger als breit, 2.—4. um $\frac{1}{3}$ länger als breit, 6. länger als das 5., eine stark seitlich zusammengedrückte Spitze darstellend. Länge: 3,5 mm.

Vorkommen. Seychellen-Inseln. Mahé: marshes on coastal plain at Anse aux Pins and Anse Royale, 19.—21. I. 1909, 1 ♀; Cascade, cultivated country near sea-level, 20. II. 1909, 9 ♀.

Neuroteleia, n. g. (Plate 3, fig. 8).

Dieses Genus unterscheidet sich von allen übrigen Scelioniden durch das Geäder, welches vollständig ist.

Antennen des ♀ mit einer sechsgliedrigen Keule .....31. *N. rufa*, n. sp.
Antennen des ♀ ohne deutliche Keule .....32. *N. heterocera*, n. sp.

31. *Neuroteleia rufa*, n. sp. (Plate 3, fig. 8).

♂♀. Rot; Kopf ausgenommen die Unterseite und Keule der Antennen des ♀ schwarz; 2.—6. Antennenglied des ♀ und Flagellum des ♂ schwarzbraun, die zwei ersten Antennenglieder sowie die Coxæ und Beine lehmgelb beim ♂. Kopf fast viereckig, kaum quer, ziemlich dicht punktiert, Augen kahl, doppelt so lang wie die Wangen, Stirn hinter den Antennen gestreift, ohne Eindruck, hintere Ocellen den Augenrand fast berührend, Hinterrand des Kopfes nicht gerandet. Scapus des ♀ kaum länger als die zwei folgenden Glieder zusammen, 3. Glied so lang wie das 2., wenigstens doppelt so lang wie dick,

4. kaum länger als dick, 5. nicht länger als dick, 6. etwas quer, Keule 6-gliedrig, fast walzenrund, ihre Glieder etwas quer und gedrängt, nur das Endglied eirund. Scapus des ♂ fast so lang wie die 2 folgenden Glieder zusammen, 3. und 4. Glied mehr als doppelt so lang wie dick, 5. zweimal, 2. und 6.—12. fast zweimal so lang wie dick, alle walzenförmig und fein behaart. Thorax schwach gewölbt, doppelt so lang wie hoch; Pronotum von oben kaum sichtbar, tief winkelig ausgeschnitten; Mesonotum länglich, ohne Parapsidenfurchen, ziemlich dicht punktiert, wie das Scutellum, dieses quer, hinten abgerundet; Metanotum mit 2 fein behaarten, am Grunde zusammenstossenden, dreieckigen Zähnen; Propleuren mit 2 von der Tegula bis zur vorderen Coxa reichenden Leisten, welche ein elliptisches Feld einschliessen. Flügel schwach angeraucht, mit vollständigem Geäder, nämlich Subcostalis, Marginalis, Postmarginalis, Radialis, Recurrens, Stigmaticalis, Basalis und Medialis; Basalis etwas länger als ihr Abstand von der Marginalis, diese punktförmig, Stigmaticalis lang, schräg und bogig, Postmarginalis kaum länger als die Stigmaticalis, Radialis lang, schräg nach dem Vorderrand laufend und diesen nicht erreichend, doppelt so lang wie die Stigmaticalis; Recurrens so lang wie die Stigmaticalis, die Richtung der Radialis fortsetzend, Discoïdalis und distaler Teil der Cubitalis wenig deutlich. Beine schlank. Abdomen des ♀ spindelförmig, länger als der übrige Körper, glatt, glänzend, vorn mit einem kurzen Horn, 1. Tergit und vorderes Drittel des 2. Tergites längsgestreift, die Streifen tief und sehr dicht, nur schwach schimmernd, die 2 vorderen Tergite länger als breit, die folgenden etwas quer, die 3 ersten fast gleichlang, die 3 letzten klein, 7. sehr kurz, kürzer als das 6. Beim ♂ ist das Abdomen um die Hälfte länger als der übrige Körper, spatelförmig, 1. und 2. Tergit die vordere Hälfte des Abdomen erreichend, längsgestreift, 1. stielartig, fast doppelt so lang wie dick, 2. länglich, etwas länger als das 4., 5.—7. sehr klein, 3.—7. glatt und glänzend. Länge: 2,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: forest above Mare aux Cochons, 2. IX. 1908, 1 ♀. Mahé: country above Port Glaud, about 500—1000 feet, 5. XI. 1908, 1 ♀; slopes of Morne Seychellois, about 1500—2000 feet, 4. II. 1909, 1 ♂.

32. *Neuroteleia heterocera*, n. sp.

♀. Rot; Kopf schwarz, unterseits heller, Antennen schwarzbraun, ausgenommen der Grund des Scapus, Abdomen rotbraun. Scapus etwas länger als die zwei folgenden Glieder zusammen, 2. Glied um die Hälfte länger als dick, 3.—6. schmaler, walzenförmig, allmählich verkürzt, 3. doppelt so lang wie das 2., 4. dreimal so lang wie dick, 6. noch $1\frac{1}{2}$-mal, die sechs folgenden so lang wie dick, etwas gedrängter als die vorigen, aber nicht dicker und keine Keule bildend. Zähne des Metanotum um mehr als ihre Breite voneinander abstehend. Marginalis halb so lang wie die Stigmaticalis, Postmarginalis $1\frac{1}{2}$-mal so lang wie die Marginalis. Das 7. Tergit länglich, länger als das 6., fast griffelartig. Alles übrige wie bei voriger Art. Länge: 2,8 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons, IX. 1908, 1 ♀.

LAMPROTELEIA, n. g. (Plate 3, fig. 9).

Augen kahl. Antennen 12-gliedrig, beim ♀ mit einer 6-gliedrigen Keule. Marginalis länger als die Stigmatica, Postmarginalis fehlend. Abdomen spindelförmig, 1. Tergit mit einem Höcker.

Parapsidenfurchen durchlaufend .....33. *L. fasciatipennis*, n. sp.
Parapsidenfurchen fehlend .....34. *L. pulchripennis*.

33. *Lamproteleia fasciatipennis*, n. sp. (Plate 3, fig. 9).

♀. Rot; Antennen, ausgenommen die 5 Endglieder, welche schwarz sind, Coxæ, Beine und Abdomen gelb, Horn des 1. Tergites rot, 2. Tergit mit je einem grossen schwarzen Fleck, Hinterende des 3. Segmentes und 4.—6. Segment schwarz, 7. Segment rot. Kopf doppelt so breit wie lang, glatt, glänzend, Scheitel und Stirn gewölbt, ohne Eindruck über den Antennen, Augen kahl, um $\frac{1}{3}$ länger als die Wangen, mit der Mandibel durch eine Furche verbunden, Ocellen ein Dreieck bildend, die hinteren sind um ihren Durchmesser von den Augen entfernt. Antennen 12-gliedrig, Scapus so lang wie die 3 folgenden Glieder zusammen, 2.—4. Glied ziemlich gleich, walzenrund, fast doppelt so lang wie dick, 5. etwas länger als dick, 6. so dick wie lang, 7. quer, etwas verdickt, die 5 folgenden noch dicker und quer, ausgenommen das Endglied. Pronotum kaum sichtbar von oben, hinten tief winkelig ausgeschnitten; Mesonotum und Scutellum glatt und quer, Parapsidenfurchen durchlaufend, Scutellum quer, hinten abgerundet, Metanotum und Mediansegment unbewehrt. Flügel bis zum hinteren Drittel des Abdomens reichend, kurz bewimpert, glashell, ausgenommen das distale Drittel und eine breite, durchlaufende Querbinde, welche angeraucht sind, die Binde erstreckt sich von der Basalis bis zur Marginalis; Marginalis länger als die Stigmaticalis, diese schräg, wenig lang, am Ende knopfförmig, Postmarginalis fehlend, Basalis durch eine Spur angedeutet; hintere Flügel gefärbt wie die vorderen. Abdomen flach gedrückt, spindelförmig, etwas länger als der übrige Körper, fein chagrinirt und kaum merklich längsgestreift; 1. Tergit länglich, stielartig, vorn mit einer schwachen, höcker artigen Erhebung, 2. Tergit etwas quer, 3. so lang wie breit, 4.—6. stark quer, 7. schmal, schwächer depress, fast griffelartig, länger als das 6. Länge: 1,8 mm.

Vorkommen. Seychellen-Inseln. Mahé: Anonyme Island, 9. I. 1909, 1 ♀.

34. *Lamproteleia pulchripennis*, n. sp.

♀. Rot; Kopf und Thorax dorsal braun, Mesosternum dunkler braun, die 5 distalen Glieder der Antennen, Horn des 1. Tergites und hintere Hälfte des Abdomen, sowie ein Fleck an beiden Seiten des 2. Tergites schwarz, die 7 ersten Antennenglieder und vordere Hälfte des Abdomen gelb. Antennen mit einer 4- oder 5-gliedrigen Keule, 2. Antennenglied $1\frac{1}{2}$-mal so lang wie dick, 3. kaum länger als dick, 4.—6. nicht länger als dick, 7. quer und etwas verdickt, aber schmaler als die 4 folgenden, diese gleichdick, quer und ziemlich gedrängt. Parapsidenfurchen fehlend. Geäder und Färbung der Flügel wie bei voriger. Abdomen ziemlich glatt, Höcker höher als dick. Alles übrige wie bei voriger Art. Länge: 1,8 mm.

Vorkommen. Seychellen-Inseln. Silhouette: near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 1 ♀.

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BARYCONUS Förster, Hymen. Stud. II. 1856, pp. 101 & 104.

35. *Baryconus calopterus*, n. sp.

♀. Schwarz; Mandibeln, Antennen ausgenommen die 5 Endglieder, Coxæ, Beine und Petiolus mit Ausnahme des Horns, gelb. Kopf quer, doppelt so breit wie lang, matt oder schwach schimmernd, chagrinirt, hinten abgerundet, nicht gerandet und nicht bogig ausgeschnitten, Stirn ohne Eindruck, gewölbt, Augen kahl, doppelt so lang wie die Wangen, mit der Mandibel durch eine Furche verbunden, hintere Ocellen den Augenrand fast berührend. Scapus wenigstens so lang wie die 5 folgenden Glieder zusammen, 2. und 3. Glied wenigstens $1\frac{1}{2}$-mal so lang wie dick, 4.—6. quer, Keule ziemlich dick, fast walzenförmig, ihre Glieder sehr gedrängt und stark quer, nur das letzte keglig und so lang wie dick. Thorax etwas länger als hoch, wenig gewölbt, schimmernd und kaum chagrinirt, vorn abgerundet, Pronotum von oben nicht sichtbar, Mesonotum kaum gewölbt, ohne Parapsidenfurchen, Scutellum quer, hinten abgerundet. Flügel weisslich vom Grunde bis zum Knopf der Stigmaticalis, von da bis zur Spitze dunkel, eine sehr schmale, bogig nach aussen gekrümmte, durchlaufende, dunkle Querbinde mündet in das Distalende der Subcostalis, letztere vom Vorderrand kaum getrennt, Marginalis kürzer als die Stigmaticalis, diese lang, schräg, am Ende knopfförmig, halb so lang wie die Postmarginalis. Abdomen flach gedrückt, spindelförmig, etwas länger als der übrige Körper, 1. und 2. Tergit längsgestreift, die folgenden glänzend und sehr fein chagrinirt, 1. Tergit länger als breit, mit einem schrägen Horn, welches länger als dick ist, 2. Tergit etwas länger als das 1., etwas kürzer als das 3., beide quer, die 3 oder 4 folgenden allmählich verkürzt; Seitenränder schneidig. Länge: 1,8 mm.

Vorkommen. Seychellen-Inseln. Mahé: Mare aux Cochons district, 1000—2000 feet, 26. I. 1909—2. II. 1909, 1 ♀.

PARATRIMORUS Kieffer, Ann. Soc. Sci. Bruxelles, 32 Mém., 1908, p. 146.

36. *Paratrimorus atriceps*, n. sp. (Text-fig. 2.)

♀. Kopf und Antennenkeule schwarz, Mandibeln rot, 1. und 2. Glied der Antennen, Coxæ und Beine gelb, 3.—6. Antennenglied bräunlich bis braun, Thorax und Abdomen braunrot. Kopf kaum breiter als der Thorax, um die Hälfte breiter als lang, fein chagrinirt, schimmernd, hinten abgerundet, nicht gerandet und nicht ausgeschnitten, Augen kahl, Wangen gestreift, Stirneindruck tief, nicht gerandet, bis zur Hälfte der Augen reichend breiter als sein Abstand vom medialen Augenrand, Ocellen ein gleichseitiges Dreieck bildend, die hinteren den Augenrand berührend. Beide Mandibeln dreispaltig, die Lappen spitz, gleichlang, fast die Mitte erreichend. Maxillarpalpen 3-gliedrig, 1. Glied keulenförmig, fast so lang wie die 2 folgenden zusammen, 2. quer, 3. doppelt so lang wie dick; Labialpalpen mit 2 gleichlangen Gliedern (Fig. 2). Scapus länger als die 5 folgenden Glieder zusammen, 2. Glied dicker und länger als das 3., beide doppelt so lang wie dick, 4.—6. kuglig, Keule sehr dick, 3—4-mal so dick wie die vorigen Glieder, fast doppelt so lang wie die 5

Fig. 2. Maxillarpalpus und Labialpalpen von *Paratrimorus atriceps*, n. sp.

vorigen zusammen, ihre 6 Glieder so dicht gedrängt, dass eine Gliederung nur unter starker Vergrösserung sichtbar wird, die 5 ersten 3-mal so lang wie dick, das 6. kurz keglig. Thorax umgekehrt eirund, vorn abgerundet, kaum länger als hoch, schimmernd und fein chagrinirt oder punktirt, Pronotum von oben nicht sichtbar, Mesonotum stark gewölbt, quer, Parapsidenfurchen bald deutlich, bald nur durch Spuren angedeutet, Scutellum quer, hinten abgerundet, vom Mesonotum durch eine Kerbfurche getrennt, am Hinterrand mit einer Punktreihe, Metanotum mit einem kleinem Dorn. Flügel kaum getrübt, kurz bewimpert, Subcostalis vom Vorderrand entfernt, Marginalis breit, fast viereckig, Postmarginalis fehlend, Stigmaticalis lang, schräg, am Ende knopfförmig, Basalis fehlend. Abdomen flach gedrückt, eirund, kaum länger als der Thorax, Seitenrand scharf schneidig, 1. und 2. Tergit längsgestreift, die folgenden glatt und glänzend, das 1. etwas breiter als lang, 2. allmählich verbreitert, 3. länger als die 2 ersten zusammen, 4.—7. sehr kurz. Länge: 1,8 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons, plateau and near by, IX. 1908, 2 ♀. Mahé: high damp forest at summit of Pilot, over 2000 feet, X.—XI. 1908, 1 ♀.

Paranteris, n. g. (Plate 3, fig. 10).

Augen behaart. Antennen 12-gliedrig, beim ♀ mit einer 6-gliedrigen Keule. Mandibeln 3-zähnig. Maxillarpalpen 3-gliedrig, Labialpalpen 2-gliedrig. Marginalis fast punktförmig, Postmarginalis fehlend oder nicht länger als die Stigmaticalis, diese schräg, lang, am Ende knopfartig. Abdomen spindelförmig oder spatelförmig, etwas länger als der übrige Körper, 1. Tergit länger als breit, vorn mit einem Höcker beim ♀.

1. Postmarginalis fehlend, 3.—11. Antennenglied des ♂ 3—4-mal so lang wie dick ..... 2.

   Postmarginalis etwa so lang wie die Stigmaticalis, 3.—11. Antennenglied des ♂ nicht länger als dick ..... 5.

2. Antennen des ♀ weisslichgelb, ausgenommen die 2 ersten Glieder ....39. *P. flaviclava*, n. sp.

   Antennen des ♀ schwarzbraun oder bräunlichgelb ..... 3.

3. Parapsidenfurchen deutlich, nur die 2 ersten Tergite gestreift ....37. *P. nigriclava*, n. sp.

   Parapsidenfurchen fehlend oder undeutlich, die 3 ersten oder alle Tergite längsgestreift ..... 4.

4. Die 2 ersten Tergite grob gestreift, die folgenden fein gestreift..... .....38. *P. nigraticeps*, n. sp.

   Die 2 ersten Tergite grob gestreift, das 3. fein gestreift, die folgenden punktiert .....42. *P. striatigena*, n. sp.

5. Keulenglieder der Antennen deutlich getrennt.....40. *P. nitidiceps*, n. sp.

   Keule nur bei starker Vergrösserung als gegliedert erscheinend ....41. *P. densiclava*, n. sp.

37. *Paranteris nigriclava*, n. sp.

♂♀. Rot; Antennen schwarz oder schwarzbraun, Scapus des ♂ ventral wenigstens am Grunde lehmgelb. Kopf und Mesonotum deutlich chagrinirt, mit zerstreuten, ziemlich groben Punkten. Kopf etwas quer, ohne Stirneindruck, hinten nicht gerandet, abgerundet, Augen fein behaart, etwas mehr als doppelt so lang wie die Wangen, diese gestreift, vom Gesicht durch eine Furche getrennt, hintere Ocellen von den Augen um ihren Durchmesser getrennt, von der vorderen um ihren doppelten Durchmesser entfernt. Mandibeln am Ende abgestutzt und mit drei kleinen, stumpfen Zähnen. Maxillarpalpen mit drei länglichen Gliedern, Labialpalpen 2-gliedrig, 1. Glied länglich, das 2. umgekehrt eirund. Antennen 12-gliedrig, Scapus des ♂ etwas länger als die zwei folgenden Glieder zusammen, 2. Glied fast kuglig, 3.—12. walzenrund, fein behaart, 3—4-mal so lang wie dick, das 5. am Grunde schwach ausgeschnitten; Scapus des ♀ etwas länger als die drei folgenden Glieder zusammen, 2. Glied $2\frac{1}{2}$-mal so lang wie dick, 3. und 4. fast 2-mal, 5. und 6. nicht länger als dick, fast kuglig, die 6 folgenden verdickt, quer, dicht gedrängt, eine Keule bildend, 1. und 6. Glied der Keule schmaler. Pronotum kaum sichtbar von oben, hinten ausgeschnitten, Mesonotum quer, Parapsidenfurchen durchlaufend, divergirend, Scutellum quer, hinten abgerundet, Metanotum und Mediansegment unbewehrt. Flügel schwach getrübt, Basalis durch eine Spur angedeutet, schräg, vón der Marginalis nicht um ihre Länge entfernt, Marginalis fast punktförmig, Postmarginalis fehlend, Stigmaticalis lang, schräg, am Ende knopfförmig. Abdomen spatelförmig, etwas länger als der übrige Körper, flach, Seitenrand schneidig, 1. Tergit stielartig, etwas länger als breit, längsgestreift wie das 2., beim ♀ mit einer schwarzen, glatten, höckerartigen Erhebung; 2. Tergit allmählich breiter werdend; die folgenden Tergite glatt und glänzend, das 3. so lang wie das 2., 5.—7. beim ♀ sehr kurz, eine dreieckige Spitze bildend, beim ♂ ist das 7. Tergit nicht sichtbar und das Abdomen hinten abgerundet. Länge: 2,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 2 ♀; Mare aux Cochons and forest near by, IX. 1908, 5 ♂; low coconut-planted country near the coast, Pointe Étienne, 17. IX. 1908, 1 ♂. Mahé: near Morne Blanc, X. 1908, 2 ♂; Mare aux Cochons district, 1000—2000 feet, 26. I. 1909—2. II. 1909, 4 ♂, 3 ♀; scrubby forest vegetation, top of Mount Sebert, 1800 feet or more, I. 1909, 1 ♂. Félicité: from forest, 14—17. XII. 1908, 1 ♀.

38. *Paranteris nigraticeps*, n. sp. (Plate **3**, fig. 10).

♂♀. Kopf und Thorax, oftmals noch das Abdomen schwarzbraun, oder nur der Kopf schwarz; Antennen beim ♀ bräunlichgelb, mit schwarzer Keule, beim ♂ schwarzbraun; Mandibeln, Coxæ and Beine gelb; Parapsidenfurchen undeutlich; 1. und 2. Tergit grob längsgestreift, die folgenden sehr fein gestreift. Sonst wie bei voriger. Länge: 2,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 1 ♂, 1 ♀; Mare aux Cochons plateau and forest above, IX. 1908, 5 ♂, 2 ♀; low coconut-planted country near the coast, Point Étienne, 17. IX. 1908, 1 ♂. Mahé: near Morne Blanc, X. 1908, 1 ♂; high forest of Morne Blanc and Pilot, XI. 1908, 1 ♂; Cascade Estate, about 800 feet, and forest 1—2000 feet, X. 1908—II. 1909, 5 ♂; forest near Mount Harrison, 1700 feet, 2. III. 1909, 4 ♂, 3 ♀.

39. *Paranteris flaviclava*, n. sp.

♀. Rot, matt oder schimmernd; 1. und 2. Antennenglied schwarzbraun, die übrigen weisslichgelb. Kopf und Thorax sehr fein punktiert oder chagrinirt. Wangen ohne deutliche Streifen, nur mit der gewöhnlichen Furche; hintere Ocellen von den Augen sowie von der vorderen Ocelle um ihren Durchmesser entfernt. Sonst wie bei *P. nigriclava*. Länge: 2,4 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons, IX. 1908, 1 ♀; near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 1 ♀. Mahé: forest near Mount Harrison, 1700 feet, 2. III. 1909, 1 ♀.

40. *Paranteris nitidiceps*, n. sp.

♂. Rot; Kopf schwarz, Antennen braunschwarz, Grund des 1. Gliedes lehmgelb, 2. Glied blass, Coxæ und Beine gelb. Kopf glatt und glänzend, Thorax glänzend, fast glatt, Parapsidenfurchen wenig deutlich. Antennenglieder 3.—12. walzenrund, nicht oder kaum länger als dick, das 5. am Grunde schwach ausgerandet. Postmarginalis vorhanden, so lang wie die Stigmaticalis. Alles übrige wie bei *P. nigriclava*. Länge: 1,8—2 mm.

Vorkommen. Seychellen-Inseln. Mahé: near Morne Blanc, X. 1908, 3 ♂.

41. *Paranteris densiclava*, n. sp.

♀. Rotbraun; Kopf und Antennenkeule schwarz, die übrigen Glieder der Antennen braun, Thorax dorsal dunkelbraun und fein behaart, Kopf quer, breiter als der Thorax, hinten bogig ausgeschnitten, glänzend, fast glatt, Augen fein behaart, hintere Ocellen vom Augenrand entfernt, Stirn ohne Eindruck. Das 2. Antennenglied $1\frac{1}{2}$-mal so lang wie dick, 3. wenig länger als dick, 4.—6. kuglig, Keule spindelförmig, ihre Glieder stark quer und so dicht gedrängt, dass die Keule nur bei starker Vergrösserung als gegliedert erscheint. Thorax so lang wie hoch, glänzend und fast glatt, Pronotum von oben kaum sichtbar, hinten bogig ausgeschnitten, Parapsidenfurchen fehlend, Scutellum quer, hinten abgerundet, Metanotum und Mediansegment senkrecht. Flügel rauchig, am Grunde heller, mit Spur einer Basalis, Subcostalis vom Vorderrand entfernt, Marginalis punktförmig, Stigmaticalis schräg, lang, am Ende knopfförmig, wenig länger als die Postmarginalis. Abdomen kaum so lang wie der übrige Körper, flach, fast eirund, 1. und 2. Tergit längsgestreift, die folgenden glatt und glänzend, das 1. nach hinten allmählich verbreitert, etwas länger als breit, am Grunde höckerartig vorstehend, 2. quer, 3. das längste aber noch quer, die folgenden sehr kurz. Länge: 1,5 mm.

Vorkommen. Seychellen-Inseln. Mahé: scrubby forest vegetation, top of Mount Sebert, 1800 feet or more, I. 1909, 1 ♀.

42. *Paranteris striatigena*, n. sp.

♀. Schwarz; Mandibeln, Antennen ausgenommen die Keule, Coxæ und Beine rot. Kopf doppelt so breit wie lang, glänzend, fein punktiert, hinten abgerundet, nicht ausgeschnitten und nicht gerandet, Augen fein behaart, hintere Ocellen vom Augenrand um etwas mehr als ihren Durchmesser entfernt, Stirn ohne Eindruck, gewölbt, mit einer Längsleiste über dem Mund, Wangen halb so lang wie die Augen, gestreift, eine Furche

verbindet die Mandibel mit dem Augengrund. Scapus fast so lang wie die 5 folgenden Glieder zusammen, 2. Glied kaum kürzer als das 3., dieses doppelt so lang wie dick, walzenförmig wie das 4., dieses wenig länger als dick, 5. und 6. schmaler, kuglig, die 6 letzten bilden eine dicke, fast walzenförmige Keule, sehr gedrängt, 2—3-mal so dick wie lang, ausgenommen das Endglied, welches keglig ist und so lang wie dick. Thorax so breit wie der Kopf, etwas länger als hoch, vorn abgerundet, glänzend und fein punktiert, Pronotum von oben nicht sichtbar, Parapsidenfurchen fehlend, Scutellum quer, hinten abgerundet, am Vorderrand und am Hinterrand von einer Kerblinie begrenzt. Flügel schwach gebräunt, kurz bewimpert, Subcostalis vom Vorderrand entfernt, Marginalis punktförmig, Postmarginalis fehlend, Stigmaticalis lang, schräg, am Ende knopfförmig. Abdomen etwas länger als der übrige Körper, so breit wie der Thorax, spindelförmig und flach, die 2 ersten Tergite grob gestreift, das 3. feiner gestreift, die folgenden fein und wenig dicht punktiert, das 1. am Grunde höckerartig vorstehend, das 2. etwas länger als das 1., kaum kürzer als das 3., beide quer, die 3 oder 4 folgenden kurz; Seitenrand schneidig. Länge: 2 mm.

Vorkommen. Seychellen-Inseln. Silhouette: near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 1 ♀.

V. **Diapriidæ.**

Schizopria, n. g. (Plate **3**, fig. 11).

Antennen des ♀ 12-gliedrig; Scutellum vorn mit einem Grübchen; Flügel an der Spitze ausgeschnitten.

Die Diapriiden-Genera mit ausgerandeten Flügeln unterscheiden sich wie folgt:

1. Antennen des ♀ 12-gliedrig ..... 2.
   Antennen des ♀ 13-gliedrig ..... 3.
2. Scutellum ohne Grübchen ..... *Adeliopria*, Ashm.
   Scutellum vorn mit einem Grübchen ..... *Schizopria*, n. g.
3. Scutellum ohne Grübchen ..... *Entomopria*, n. g. (Sp. typ.: *solida*, Thoms.)
   Scutellum vorn mit einem Grübchen ..... *Entomacis*, Först.

Die zwei *Schizopria*-Arten unterscheiden sich leicht voneinander:

1. Keule der Antennen braun, 1-gliedrig ..... 43. *S. fallax*, n. sp.
   Keule der Antennen gelb, 6-gliedrig ..... 44. *S. flaviclava*, n. sp.

43. *Schizopria fallax*, n. sp. (Plate **3**, fig. 11).

♀. Schwarz; Antennen braun, Scapus, Coxæ und Beine blassrot, Mandibeln, Metathorax oder der ganze Thorax und Petiolus rot. Glatt und glänzend. Kopf kuglig, ohne Haarfilz, Augen kahl, etwas länger als die Wangen, diese ohne Furche, Mandibeln zweizähnig. Maxillarpalpen mit 5 kurzen Gliedern, Labialpalpen 3-gliedrig, das 2. Glied quer. Antennen der Augenmitte gegenüber entspringend, 12-gliedrig, Scapus distal keulenförmig verdickt, so lang wie die 4 folgenden Glieder zusammen, 2. Glied etwas

länger und etwas dicker als die folgenden, doppelt so lang wie dick, die folgenden allmählich verkürzt und verengt, in der distalen Hälfte der Antenne sind die Glieder fast kuglig, das 12. verdickt, eine Keule bildend, mehr als doppelt so lang wie das 11., ohne Spur einer Gliederung; Borsten schräg und ziemlich lang. Thorax ohne Haarfilz, so hoch wie lang, Pronotum von oben nicht sichtbar, Mesonotum quer, gewölbt, ohne Parapsidenfurchen, Scutellum schwach gewölbt, vorn mit einer grossen Grube, Mediansegment mit einem Längskiel. Flügel schwach getrübt, am Ende herzförmig ausgeschnitten, lang bewimpert, Subcostalis vom Vorderrand wenig entfernt, in denselben vor der Flügelmitte plötzlich mündend, Marginalis fast punktförmig, Stigmaticalis dick, schräg, blass, 2—3-mal so lang wie die Marginalis, eine winkelige, wenig deutliche Querlinie ersetzt die Basalis und die Discoïdalis. Hintertibien viel länger als die Femora, in der distalen Hälfte plötzlich verdickt. Petiolus $1\frac{1}{2}$-mal so lang wie dick, fast kahl, Abdomen flach gedrückt, so lang wie der Thorax, 2. Tergit die vorderen $\frac{4}{5}$ deckend, Analsegment mit 2 gelblichen eingekrümmten Lappen, welche den Genitalien der ♂ ähneln. Länge: 1,5 mm.

Vorkommen: Seychellen-Inseln. Silhouette: near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 2 ♀. Mahé: Mare aux Cochons district, 1000—2000 feet, 26. I. 1909—2. II. 1909, 1 ♀; Cascade Estate, about 1000 feet, II.—III. 1909, 2 ♀.

44. *Schizopria flaviclava*, n. sp.

♀. Schwarz; Coxæ und Beine gelb, Antennenkeule blassgelb, Metathorax und Petiolus rotbraun. Das 3. Antennenglied etwas kürzer und dünner als das 2., walzenrund, länglich, 3.—6. gleichdünn, 5. und 6. wenig länger als dick, Keule 6-gliedrig, ihre Glieder fast kuglig, allmählich verdickt, das 11. von dem 12. wenig getrennt, beide dicker als die vorigen, das 12. lang eirund. Sonst alles wie bei voriger Art. Länge: 1,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons, IX. 1908, 1 ♀.

ENTOMACIS Förster, Hymen. Stud. ii. 1856, pp. 121 & 123.

Antennenglieder 6—8 des ♀ 2-mal so lang wie dick .....45. *E. longicornis*, n. sp.

Antennenglieder 6—8 des ♀ fast kuglig wie die folgenden...

.....46. *E. curticornis*, n. sp.

45. *Entomacis longicornis*, n. sp.

♀. Schwarz; Scapus, Coxæ und Beine gelb, Thorax, Petiolus und Grund des 2. Tergites rotbraun. Scapus proximal verengt, kürzer als die 3 folgenden Glieder zusammen, 2. Glied dick, kürzer als das 3., 3.—5. gleichdünn, das 3. dreimal so lang wie dick, dem 4. gleich, 5. wenigstens doppelt so lang wie dick, die 8 folgenden allmählich schwach verdickt, eine 8-gliedrige Keule bildend, 6. und 7. Glied wenigstens doppelt so lang wie dick, 8. fast doppelt so lang wie dick, 9.—12. ziemlich kuglig, 13. lang ellipsoïdal. Parapsidenfurchen hinten sehr deutlich, vorn weniger. Petiolus fast 2-mal so lang wie dick, Abdomen hinten abgerundet, ohne Anhänge. Alles übrige wie bei *Schizopria*. Länge: 1,5 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, I.—III. 1909, 2 ♀.

46. *Entomacis curticornis*, n. sp.

♂♀. Schwarz; Scapus, Coxæ und Beine gelb; beim ♂ sind der Metathorax und der Petiolus rot. Antennen des ♂ fadenförmig, dünn, fein behaart, fast doppelt so lang wie der Körper, 2. Glied wenig länger als dick, 3. walzenrund, etwas kürzer als das 4., dieses schwach bogig aber nicht verdickt, 4.—13. 3—4-mal so lang wie dick. Antennen des ♀ kurz, 3.—5. Glied dünn, kaum doppelt so lang wie dick, die 2 folgenden Keulenglieder fast kuglig, ausgenommen das 13., welches lang eirund ist. Parapsidenfurchen deutlich, fast durchlaufend, vorn undeutlich. Subcostalis den Vorderrand fast berührend, am Ende nicht gebogen, Marginalis punktförmig, nicht verdickt, Stigmaticalis schräg, nicht verdickt, Basalis und Discoïdalis durch eine Spur einer winkeligen Linie angedeutet. Petiolus fast doppelt so lang wie dick, Abdomen kürzer als der Thorax, hinten abgestutzt. Sonst wie *Schizopria*. Länge: 1,2 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, I.—III. 1909, 2 ♂; marshes on coastal plain at Anse aux Pins and Anse Royale, 19.—21. I. 1909, 2 ♀.

Loxotropa Förster, Hymen. Stud. ii. 1856, pp. 122, 123, & 126.

Thorax schwarz ..... 47. *L. exsul*, n. sp.
Thorax rötlichbraun ..... 48. *L. semirufa*, n. sp.

47. *Loxotropa exsul*, n. sp.

♂♀. Schwarz; Antennen des ♀ ausgenommen die Keule, Scapus des ♂, Coxæ, Beine und Petiolus rot, Flagellum des ♂ braun. Schläfe und Prothorax mit einem weissen Haarfilz. Kopf kuglig. Scapus proximal verengt, beim ♀ so lang wie die 4 folgenden Glieder zusammen, 2. Glied etwas dicker und etwas länger als das 3., dieses wenig länger als dick, 3.—9. gleichdünn, 4.—9. nicht länger als dick, 10.—12. eine abgesetzte, gleichdicke Keule bildend, deren Glieder doppelt so dick wie die vorhergehenden, 11. etwas quer; Scapus des ♂ so lang wie die 3 folgenden Glieder zusammen, 2. und 3. Glied nicht länger als dick, 4.—14. etwas länger als dick, das 4. verdickt, alle fein behaart. Scutellum wenig gewölbt, vorn mit einem Grübchen. Flügel glashell, Basalis senkrecht, den Vorderrand aber nicht erreichend, von der Marginalis proximal entfernt. Petiolus fein behaart, $1\frac{1}{2}$-mal so lang wie dick, Abdomen schwach depress, gestaltet wie gewöhnlich. Länge: 1,5—2,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons and forest near by, IX. 1908, 1 ♂, 1 ♀. Mahé: slopes of Morne Seychellois, about 1500—2000 feet, 4. II. 1909, 1 ♀.

48. *Loxotropa semirufa*, n. sp.

♂. Schwarz; die 4 oder 5 proximalen Antennenglieder, Thorax, Coxæ, Beine und Petiolus rot, die 7 oder 8 distalen Glieder der Antennen schwarzbraun. Antennen länger als der Körper, fein behaart, Scapus ziemlich walzenrund, fast so lang wie die 3 folgenden Glieder zusammen, 2. und 3. Glied kaum länger als dick, 4.—13. wenigstens um $\frac{1}{3}$ länger

als dick, das 4. nicht verdickt, in der Mitte kaum vorstehend, das 14. länglich. Stigmaticalis dreieckig, am abgestutzten Distalende mit einem kleinen senkrechten Nerv. Sonst wie bei voriger. Länge: 1,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons, IX. 1908, 1 ♂.

Rhopalopria, n. g. (Plate 3, fig. 12).

Scapus in der distalen Hälfte plötzlich stark verdickt, doppelt so dick wie proximal. Antennen des ♂ 14-gliedrig, mit abstehenden Haarwirteln, die des ♀ 12-gliedrig, mit einer 6-gliedrigen Keule. Sonst wie bei *Diapria*.

49. *Rhopalopria vulgaris*, n. sp. (Plate 3, fig. 12).

♂♀. Schwarz; proximale Hälfte des Scapus, Mandibeln, Coxæ und Beine rot. Schläfe, Prothorax und Metapleuren mit einem schwachen Haarfilz, Petiolus noch schwächer behaart. Kopf kuglig, Augen kahl, Mandibeln zweilappig, Palpen weisslich und kurz, die Maxillarpalpen 5-gliedrig, die Labialpalpen 2- oder 3-gliedrig. Scapus des ♂ so lang wie die 3 folgenden Glieder zusammen, in der distalen Hälfte doppelt so dick wie in der proximalen, 2. Glied $1\frac{1}{2}$-mal so lang wie dick, 3. walzenrund, fast doppelt so lang wie das 2., 4. etwas kürzer als das 3., stark bogig gekrümmt, distal verdickt, die folgenden kurz eirund oder kuglig, 14. länglich, alle Flagellumglieder mit einem schwarzen Haarwirtel, der nicht doppelt so lang wie die Dicke der Glieder ist; Scapus des ♀ weniger stark keulenförmig, 3.—6. Glied dünner als das 2., gleichdünn und allmählich verkürzt, 3. doppelt so lang wie dick, 6. nicht länger als dick, 7.—12. eine Keule bildend, ziemlich kuglig, allmählich verdickt, die drei letzten gleichdick, das 12. eirund. Thorax länger als hoch, Parapsidenfurchen fehlend, Scutellum wenig gewölbt, vorn mit einem Grübchen, Mediansegment mit einem Längskeil. Flügel glashell, lang bewimpert, Geäder wie bei *Diapria*. Distales Drittel der Hintertibien plötzlich verdickt. Petiolus so dick wie lang, Abdomen etwas depress, lang elliptisch, 2. Tergit vorn wie bei *Spilomicrus*. Länge: 1,5—2 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons, IX. 1908, 2 ♀. Mahé: country above Port Glaud, about 500—1000 feet, 5. XI. 1908, 1 ♂, 1 ♀; Cascade Estate, forest, 1000—2000 feet, I.—III. 1909, 5 ♂; Cascade, cultivated country near sea-level, 20. II. 1909, 3 ♂, 1 ♀; marshes on coastal plain at Anse aux Pins and Anse Royale, 19.—21. I. 1909, 1 ♂.

Diapria Latreille, Préc. car. gén. Ins. ii. 1796, p. 110.

1. Petiolus 3-mal so lang wie dick ..... 50. *D. seychellensis*, n. sp.
   Petiolus $1\frac{1}{2}$-mal so lang wie dick ..... 2.
2. Antennenkeule 5-gliedrig ..... 3.
   Keule der Antennen 3-gliedrig..... 53. *D. saxatilis*, n. sp.
3. Tergite 3—8 des ♀ zusammen so lang wie die Breite des 3....51. *D. scotti*, n. sp.
   Tergite 3—8 des ♀ zusammen doppelt so lang wie die Breite des 3.....
   52. *D. mahensis*, n. sp.

50. *Diapria seychellensis*, n. sp. (Plate **3**, fig. 13).

♂♀. Schwarz; Coxæ, Beine und Antennen rot, die 4 oder 5 Endglieder der Antennen beim ♀ und die Knoten der Flagellumglieder des ♂ schwarz. Schläfen und Prothorax mit weissem Haarfilz, Metapleuren und Petiolus nur fein behaart. Kopf kuglig, Scapus walzenrund, schwach bogig, beim ♀ länger als die 3 folgenden Glieder zusammen, 2. Glied kürzer als das 3., 3.—6. gleichdünn, walzenrund, doppelt so lang wie dick, 7. kaum kürzer als das 6. und kaum dicker, 8.—12. allmählich verdickt, nicht länger als dick, das 11. so dick wie das eirunde Endglied. Antennen des ♂ fast doppelt so lang wie der Körper, Scapus etwas kürzer als die 3 folgenden Glieder zusammen, 2. Glied kuglig, 3. sitzend, in der Mitte schwach verengt, mit 2 Haarwirteln, 4. etwas länger als das 3., nicht ausgeschnitten und nicht gebogen, aus einem ellipsoïdalen Knoten und einem langen Stiel bestehend, letzterer wenigstens so lang wie der Knoten, der Haarwirtel 2—3-mal so lang wie die Dicke des Gliedes; die folgenden Glieder sind dem 4. gleich, aber der Petiolus ist länger als der Knoten, an den letzten Gliedern jedoch kürzer als der Knoten, 14. Glied länglich. Thorax länger als hoch; Scutellum bald nur gewölbt, bald deutlich gekielt, vorn mit einem oberflächlichen Grübchen; Mediansegment mit einem Längskiel. Flügel lang, glashell, lang bewimpert, ohne Spur einer Basalis, Subcostalis und Marginalis wie bei *Diapria*. Hintertibien im distalen Drittel plötzlich verdickt. Petiolus 3-mal so lang wie dick, Abdomen lang elliptisch, etwas depress, 2. Tergit vorn vorstehend wie bei *Spilomicrus*. Länge: 2—2,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons, IX. 1908, 2 ♂, 2 ♀. Mahé: high damp forest at summit of Pilot, over 2000 feet, X.—XI. 1908, 2 ♂; high forest near Morne Blanc, XI. 1908, 1 ♀; Cascade Estate, about 1000 feet, 1909, 1 ♂.

51. *Diapria scotti*, n. sp.

♂♀. Schwarz; Coxæ und Beine rotgelb, Antennen des ♀ mit Ausnahme der 4 Endglieder gelbrot, die des ♂ hellrot. Schläfe und Prothorax mit weissem Haarfilz, Metapleure und Petiolus nur feinhaarig. Kopf kuglig. Scapus proximal verengt, beim ♀ länger als die 3 folgenden Glieder zusammen, 2. Glied dicker als das 3., aber nicht länger, 3.—7. gleichdünn, $1\frac{1}{2}$-mal so lang wie dick, walzenrund, 8.—12. eine Keule bildend, nicht länger als dick, ausgenommen das eirunde Endglied, 8. schmaler als das 9., 9.—12. gleichdick. Antennen des ♂ etwas länger als der Körper, 3. Glied lang ellipsoïdal und sitzend, 4.—13. ellipsoïdal, mit sehr kurzem Stiel, das 14. länglich, Haarwirtel doppelt so lang wie die Dicke der Glieder, 4. Glied weder gekrümmt noch verdickt. Thorax so breit wie der Kopf; Scutellum gekielt, vorn mit einem Grübchen; Mediansegment mit einem Längskiel. Flügel lang, glashell, lang bewimpert, Marginalis wie bei *Diapria*, etwas schräg, ohne Spur der Basalis. Petiolus $1\frac{1}{2}$-mal so lang wie dick, Abdomen flach gedrückt, 2. Tergit vorn gehoben wie bei *Spilomicrus*, 3.—8. Tergit beim ♀ ein Dreieck bildend, dieses so lang wie breit, beim ♂ ist das Abdomen hinten abgerundet. Länge: 2,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: low coconut-planted country near the coast, Point Étienne, 17. IX. 1908, 1 ♂. Mahé: near Morne Blanc, 1908, 1 ♂; Cascade Estate, about 800 feet or over, X. 1908—I. 1909, 1 ♀.

52. *Diapria mahensis*, n. sp.

♀. Schwarz; Scapus rot, Flagellum schwarzbraun, Coxæ und Beine gelb. Antennenglieder 2.—6. gleichdünn, 1½-mal so lang wie dick, 3.—6. walzenrund, Keule 5-gliedrig, 8.—10. allmählich verdickt, 10.—12. gleichdick. Tergite 3—8 ein Dreieck bildend, welches doppelt so lang wie breit ist. Sonst wie bei voriger Art. Länge: 2 mm.

Vorkommen. Seychellen-Inseln. Mahé: 1 ♀.

53. *Diapria saxatilis*, n. sp.

♂♀. Schwarz; Antennen, Coxæ und Beine rot, ausgenommen die Keule des ♀ und der Knoten der Flagellumglieder des ♂. Schläfe und Prothorax mit weissem Haarfilz, Metapleuren und Petiolus fein behaart. Kopf kuglig. Scapus etwas verengt am Grunde, 2. Glied dicker als die folgenden, 1½-mal so lang wie dick, 3.—9. gleichdünn, 3.—7. walzenrund, länger als dick, 8. und 9. kuglig; die 3 folgenden bilden eine abgesetzte Keule, deren 1. Glied schmaler als das 2. und etwas länger als dick ist, 2. nicht länger als dick, 3. eirund. Beim ♂ ist das 3. Glied walzenrund, so lang wie das 4., dieses schwach gebogen, 4.—13. ellipsoïdal und gestielt, Stiel zuerst ⅔ so lang wie das Glied, dann allmählich verkürzt, 14. sitzend; Haarwirtel 2—3-mal so lang wie die Dicke der Glieder. Scutellum gekielt, vorn mit einem Grübchen. Flügel wie bei *seychellensis*, proximaler Teil bis zur Marginalis unbehaart. Petiolus und Abdomen wie bei *scotti*. Länge: 2—2,5 mm.

Vorkommen. Seychellen-Inseln. Praslin: Côtes d'Or Estate, especially from Coco-de-Mer forest in the Vallée de Mai, 28, 29. XI. 1908, 1 ♂. Silhouette: high country near Pot-à-eau, VIII. 1908, 1 ♂, 1 ♀. Mahé: Cascade Estate, about 800 feet or over, X. 1908—I. 1909, 1 ♀; forest behind Trois Frères, about 2000 feet, 14. I. 1909, 1 ♀.

Calogalesus, n. g.

Von *Galesus* zu unterscheiden durch den Mangel der Parapsidenfurchen, die 7-gliedrige Keule der Antennen und das Geäder, welches aus einer Subcostalis, einer Marginalis und einer Stigmaticalis besteht.

54. *Calogalesus parvulus*, n. sp.

♀. Schwarz; Mandibeln, Antennen ausgenommen die Keule, Coxæ und Beine gelb, Thorax, Petiolus und hinteres Drittel des Abdomen rot. Kopf etwas länger als breit; von der Seite gesehen erscheint die dorsale Fläche des Kopfes gewölbt, die ventrale horizontal; Mund zugespitzt, am Hinterrand des Kopfes befindlich, die Richtung der Stirn fortsetzend und bis zu den vorderen Coxæ reichend; Ocellen dem Vorderrand des Kopfes näher als dem Hinterrand; Vorderrand des Kopfes mit je einem Zahn, vor dem die Stirn bis zur Lamelle fast senkrecht abfällt, Stirnlamelle in 2 Lappen geteilt. Palpen nicht vorstehend. Antennen 12-gliedrig, auf der Lamelle inserirt, Scapus proximal verengt, so lang wie die 4 oder 5 folgenden Glieder zusammen, 2. Glied 1½-mal so lang wie dick, umgekehrt keglig, 3.—5. gleichdünn, das 3. etwas länger als dick, 4. und 5. nicht länger als dick, Keule stark abgesetzt und 7-gliedrig, ihre Glieder allmählich verdickt und kuglig, ausgenommen das eirunde Endglied. Thorax länger als hoch, Prothorax mit schwachem Haarfilz, Scutellum fast flach, vorn mit 2 zusammenfliessenden

Grübchen. Flügel glashell, sehr lang bewimpert, Subcostalis, Marginalis und Stigmaticalis glashell, erstere zuerst vom Vorderrand entfernt, dann den Vorderrand bildend, am Ende etwas breiter, Stigmaticalis kaum schräg, breit, am Ende noch breiter. Hintertibien nicht länger als die Femora, distales Drittel verdickt. Petiolus etwas gebogen, ziemlich kahl, fast doppelt so lang wie dick, Abdomen von der Seite zusammengedrückt, länger als der Thorax, schmal, das Enddrittel bildet einen spitzen und etwas eingekrümmten Kegel; Bohrer kaum vorstehend. Länge: 1 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, about 800 feet or over, X. 1908—I. 1909, 1 ♀.

MICROGALESUS, n. g.

Von *Galesus* zu unterscheiden durch den Mangel der Parapsidenfurchen, die 3-gliedrige Keule der Antennen und das Geäder, welches aus einer Subcostalis und aus einer Marginalis besteht.

55. *Microgalesus quadridens*, n. sp.

♀. Schwarz; Antennen mit Ausnahme der Keule, Coxæ, Beine und Petiolus gelb, Mandibeln rot, Thorax braun. Kopf länger als breit, glatt und glänzend, wie der ganze Körper, Vorderrand bogig ausgeschnitten, jeder Lappen mit 2 nebeneinander stehenden Dörnchen, welche schwach bogig, nach hinten gekrümmt erscheinen; Ocellen dem Vorderrand des Kopfes weit mehr als dem Hinterrand genähert, Augen gross, Stirn ausgehöhlt, von der Seite gesehen schräg abfallend bis zu den Antennen, Gesicht von den Antennen bis zum Mund dem Scheitel parallel, horizontal, Medianlinie stark gewölbt; Mandibeln am Hinterrand des Kopfes entspringend, wenig lang, parallel und die wagerechte Richtung des Gesichtes fortsetzend, zugespitzt, am Grunde mit einem Zahn. Palpen blass, Maxillarpalpen wenigstens 4-gliedrig, Labialpalpen wenigstens 2-gliedrig. Scapus so lang wie die 5 folgenden Glieder zusammen, 2. Glied wenigstens doppelt so lang wie dick, 3.—9. sehr dünn, das 3. kaum länger als dick, 4.—6. kuglig, 7.—9. quer; Keule stark abgesetzt, doppelt so dick wie die vorigen Glieder, ihre 2 ersten Glieder fast quer, das 3. eirund. Thorax länger als hoch, Prothorax mit schwachem Haarfilz, Mesonotum flach, Scutellum fast flach, vorn mit einem Grübchen. Flügel behaart und bewimpert, Geäder wie bei *Diapria*, Marginalis am Distalende mit einer kurzen Spitze nach der Flügelscheibe, ohne Spur einer Basalis. Petiolus kaum so lang wie dick, Abdomen flach gedrückt, elliptisch, hinten abgerundet. Länge: 1 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, 1909, 1 ♀.

VI. **Belytidæ.**

BELYTA Jurine, Nouv. méth. class. Hym., 1807, p. 311.

56. *Belyta exsul*, n. sp.

♂♀. Beim ♂ ist der Kopf schwarz, Thorax dunkelbraun bis schwarz, Abdomen rotbraun, 1. und 2. Antennenglied, Tegulæ, Coxæ und Beine gelbrot; beim ♀ ist der Kopf schwarzbraun, ventral rotbraun, der Thorax rotbraun bis schwarzbraun, das Abdomen gelbrot, Antennen, Coxæ und Beine gelb. Kopf von der Seite gesehen höher als lang

beim ♂, so lang wie hoch beim ♀; Scapus walzenrund, beim ♂ so lang wie das 3. Glied, 2. Glied kuglig, 3. wenigstens 3-mal so lang wie dick, in der proximalen Hälfte ausgeschnitten, 4. etwas kürzer als das 3., die folgenden allmählich dünner werdend und kaum kürzer, 13. fast 3-mal so lang wie dick, kaum kürzer als das 14.; Scapus des ♀ länger als die 3 folgenden Glieder zusammen, 2. 1½-mal so lang wie dick, 3. doppelt so lang wie dick, die folgenden allmählich verdickt, quer, ausgenommen das eirunde 15. Glied. Thorax breiter als hoch, Mediansegment hinten unbewehrt, Mittellängsleiste fast vom Grunde aus gespalten. Flügel glashell, Basalis kürzer als ihr Abstand von der Marginalis, Radialzelle schmal, distal allmählich erloschen, Marginalis länger als die Radialzelle, so lang wie die Basalis, 3-mal so lang wie die schräge Stigmaticalis, Recurrens so lang wie die Marginalis, nach dem Grunde der Basalis gerichtet, schwach ausgebildet. Petiolus gestreift, 2½-mal so lang wie dick; Abdomen ziemlich spindelförmig, schwach depress, hinten beim ♂ eingekrümmt, 2. Tergit vorn nicht gestreift. Länge: 3 mm.

Vorkommen. Seychellen-Inseln. Silhouette: forest above Mare aux Cochons, 2. IX. 1908, 8 ♂. Mahé: near Morne Blanc, X. 1908, 1 ♂; high forest of Morne Blanc, 24. X. 1908, 1 ♂; country above Port Glaud, about 500—1000 feet, 5. XI. 1908, 3 ♂; Cascade Estate, 800—1000 feet, I.—III. 1909, 6 ♂, 1 ♀. Praslin: Côtes d'Or Estate, especially from Coco-de-Mer forest in the Vallée de Mai, 28. XI. 1908, 2 ♂.

PANTOCLIS Förster, Hym. Stud. ii. 1856, pp. 129, 131 & 136.

1. Körper schwarz, Petiolus gestreift.....2.
   Körper rot, Kopf schwarz, Petiolus glatt .....57. *P. insulanus*, n. sp.
2. Die 2 ersten Antennenglieder und das hintere Viertel des Abdomens gelbrot .....58. *P. seychellensis*, n. sp.
   Antennenglieder 2.—5. gelbrot beim ♀, Abdomen ganz schwarz .....59. *P. scotti*, n. sp.

57. *Pantoclis insulanus*, n. sp.

♀. Rot; Kopf schwarz, Antennen distal allmählich dunkler, Coxæ und Beine gelb. Kopf von der Seite gesehen viel höher als lang. Scapus schlank, etwas gekrümmt, so lang wie die 3 folgenden Glieder zusammen, 2. und 4. Glied etwas länger als dick, 3. mehr als doppelt so lang wie dick, 5.—14. kaum quer, 15. kurz eirund. Flügel glashell, Basalis kürzer als ihr Abstand von der Marginalis, Stigmaticalis länger als die Marginalis, sehr schräg, Radialzelle geschlossen, kaum doppelt so lang wie breit, von der Postmarginalis nicht überragt, Recurrens nicht länger als die Stigmaticalis, nach der Basalis gerichtet. Petiolus kaum 2-mal so lang wie dick, glatt und walzenrund, Abdomen schwach depress, spindelförmig, 2. Tergit die zwei vorderen Drittel einnehmend, die 6 letzten Tergite kurz, einen spitzen Kegel bildend, Bohrer lang vorstehend. Länge: 2,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: high forest above Mare aux Cochons, IX. 1908, 1 ♀.

58. *Pantoclis seychellensis*, n. sp.

♂♀. Schwarz; Mandibeln, Palpen, 1. und 2. Antennenglied, Coxæ, Beine und hinteres Viertel des Abdomen gelbrot. Augen fein behaart. Scapus walzenrund, beim

♂ 4-mal so lang wie das 2. Glied, dieses so dick wie lang, 3. kürzer als der Scapus, 3-mal so lang wie dick, am Grunde schwach ausgeschnitten, die folgenden allmählich verengt und verkürzt, das 13. dem 14. gleich, 3-mal so lang wie dick. Beim ♀ ist das 2. Antennenglied länger als dick, ein Viertel des Scapus erreichend, das 3. allmählich verdickt, 3-mal so lang wie dick, 4. und 5. etwas länger als dick, die folgenden schwach verdickt und etwas quer, ausgenommen das eirunde Endglied. Flügel schwach rauchig, Basalis von der Marginalis um mehr als ihre Länge entfernt, Stigmaticalis sehr schräg, wenigstens so lang wie die Marginalis, Radialzelle geschlossen, 2—3-mal so lang wie breit, von der Postmarginalis etwas überragt, Recurrens der Stigmaticalis gleich, nach der Basalis gerichtet. Petiolus gestreift, 2-mal so lang wie dick, Abdomen länglich, länger als der Thorax, schwach depress, hinten beim ♂ eingekrümmt, beim ♀ keglig, mit vorragendem Bohrer, 2. Tergit vorn gestreift. Länge: 2,5—3 mm.

Vorkommen. Seychellen-Inseln. Silhouette: near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 1 ♂, 1 ♀; Mare aux Cochons, plateau and forest above, VIII—IX. 1908, 6 ♂, 5 ♀. Mahé: near Morne Blanc, X. 1908, 2 ♀; country above Port Glaud, about 500—1000 feet, 5. XI. 1908, 1 ♀; high damp forest between Trois Frères and Morne Seychellois, about 1500—2000 feet, 9. and 10. XII. 1908, 1 ♂; Cascade Estate, forest above 1000 feet, I. 1909, 1 ♂.

59. *Pantoclis scotti*, n. sp.

♂♀. Schwarz; Coxæ, Beine und, beim ♀, 2.—5. Antennenglied gelbrot. Scapus des ♂ nur 3-mal so lang wie das 2. Glied, dieses kuglig, 3. Glied etwas länger als der Scapus, am Grunde schwach ausgeschnitten, die folgenden kürzer, allmählich verengt und verkürzt, 13. noch doppelt so lang wie dick; Scapus des ♀ 4-mal so lang wie das 2. Glied, dieses etwas länger als dick, 3. so lang wie der Scapus, doppelt so lang wie das 4., welches 2-mal so lang wie dick ist, 5. dem 4. gleich, die folgenden kaum dicker, allmählich verkürzt, die letzten noch wenigstens so lang wie dick. Flügel fast glashell, Stigmaticalis etwas kürzer als die Marginalis, sehr schräg, Radialzelle geschlossen, 2-mal so breit wie lang, von der Postmarginalis nicht überragt, Recurrens so lang wie die Stigmaticalis, nach der Basalis gerichtet. Petiolus gestreift, $1\frac{1}{2}$-mal so lang wie dick, Abdomen nicht länger als der Thorax, fast spindelförmig, Bohrer lang vorragend; 2. Tergit vorn gestreift. Länge: 2—2,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: near Mont Pot-à-eau, about 1500 feet, VIII. 1908, 1 ♀; Mare aux Cochons, plateau and forest above, VIII.—IX. 1908, 1 ♂, 1 ♀; low coconut-planted country near the coast, Pointe Étienne, 17. IX. 1908, 1 ♂.

Xenotoma Förster, Hym. Stud. ii. 1856, pp. 129, 130 & 137.

60. *Xenotoma insularis*, n. sp.

♂♀. Schwarz; Mandibeln, Coxæ und Beine rot, 1. und 2. Antennenglied lehmgelb oder braun. Mandibeln lang und sich kreuzend. Antennen schlank, fadenförmig, Scapus 4—5-mal so lang wie das 2. Glied, dieses länger als dick, 3. Glied beim ♂ 4-mal so lang wie dick, schwach gekrümmt, die folgenden allmählich verkürzt, das 13. noch mehr als doppelt so lang wie dick, dem 14. gleich; 3. Glied beim ♀ 3-mal so lang wie dick, die folgenden allmählich verkürzt, 14. noch fast 2-mal so lang wie dick. Flügel fast glashell,

Marginalis halb so lang wie die Radialzelle, etwas länger als die Stigmaticalis, diese senkrecht, Radialzelle 2—3-mal so lang wie breit, von der Postmarginalis nicht überragt, Recurrens bogig, doppelt so lang wie die Stigmaticalis, nach der Discoïdalis gerichtet. Petiolus lederartig, 2—2½-mal so lang wie dick, Abdomen bis zur Mitte allmählich breiter werdend. Länge: 2—2,5 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons and forest above, IX. 1908, 3 ♂, 3 ♀. Mahé: near Morne Blanc, X. 1908, 1 ♂; Cascade Estate, 800—1000 feet, I.—III. 1909, 2 ♂, 1 ♀; Mare aux Cochons district, 1000—2000 feet, 26. I. 1909—2. II. 1909, 2 ♂.

LEPTORHAPTUS Förster, Hym. Stud. ii. 1856, pp. 129 & 137.

Recurrens bogig gekrümmt ..... 61. *L. heteropus*, n. sp.

Recurrens gerade, nach der Basalis gerichtet ..... 62. *L. insulanus*, n. sp.

61. *Leptorhaptus heteropus*, n. sp. (Text-fig. 3.)

♂♀. Schwarz; Mandibeln, Palpen, 2. Antennenglied, Coxæ und Beine gelbrot; Hinterbeine schwarzbraun, Distalende der Coxa, Trochanter und Knie rot. Mandibeln ungleich (fig. 3), die eine 2-zähnig, die andere einfach. Antennen fadenförmig, beim ♀ schlanker als beim ♂, Scapus so lang wie das 3. Glied, beim ♂ ist das 3. Glied in der proximalen Hälfte stark ausgebuchtet, etwas länger als das 4., dieses 4-mal so lang wie dick; 13. noch 3-mal kürzer als das 14., beim ♀ ist das 14. Glied doppelt so lang wie dick, kürzer als das 15. Flügel fast glashell, Marginalis wenig länger als die Radialzelle, diese schmal, 2—3-mal so lang wie breit, von der Postmarginalis um mehr als ihre Länge überragt, Recurrens stark bogig gekrümmt, länger als die Marginalis, die Discoïdalis fast berührend, der Basalis parallel, Stigmaticalis etwa punktförmig. Petiolus 3—4-mal so lang wie dick, grob gestreift, Abdomen vorn schmal, bis hinter die Mitte allmählich verdickt, Hinterende keglig, beim ♀ seitlich schwach zusammengedrückt. Länge: 3 mm.

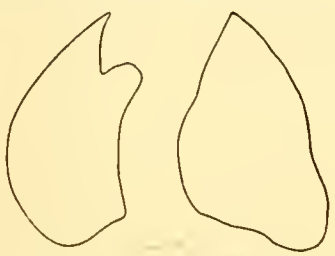


Fig. 3. Die beiden Mandibeln von *Leptorhaptus heteropus*, n. sp.

Vorkommen. Seychellen-Inseln. Silhouette: near Pot-à-eau, VIII. 1908, 1 ♀; forest above Mare aux Cochons, IX. 1908, 4 ♂, 1 ♀. Mahé: near Morne Blanc, X. 1908, 2 ♂; high forest of Morne Blanc and Pilot, XI. 1908, 1 ♂, 1 ♀; Mare aux Cochons district, 1—2000 feet, 26. I. 1909—2. II. 1909, 1 ♂; Cascade Estate, about 1000 feet, II. 1909, 1 ♂. Praslin: Côtes d'Or Estate, Coco-de-Mer forest in the Vallée de Mai, XI. 1908, 1 ♀.

62. *Leptorhaptus insulanus*, n. sp. (Text-fig. 4.)

♂♀. Gelbrot; Kopf schwarz, Gesicht oft braun, Flagellum braun oder schwarzbraun. Mandibeln ungleich (fig. 4), die eine, durch einen spitzen Einschnitt, in 2 dreieckige Zähne gespalten, die andere zugespitzt, vor der Mitte mit einem stumpfen und kurzen Zahn. Antennen fadenförmig, Scapus des ♂ kaum länger als das 3.

Fig. 4. Die beiden Mandibeln von *Leptorhaptus insulanus*, n. sp.

Glied, 2. Glied $1\frac{1}{2}$-mal so lang wie dick, 3. 3—4-mal so lang wie dick, im proximalen Drittel ausgerandet, die folgenden allmählich verkürzt, 13. noch mehr als doppelt so lang wie dick, kürzer als das 14.; Scapus des ♀ um die Hälfte länger als das 3. Glied, 2. wie beim ♂, 3. um die Hälfte länger als das 4., 4-mal so lang wie dick, 4. dem 5. gleich, die folgenden allmählich verkürzt, nicht verdickt, 13. und 14. kaum länger als dick, 15. eirund. Flügel glashell, Marginalis so lang wie die Radialzelle, diese schmal, geschlossen, 2-mal so lang wie breit, um ihre ganze Länge von der Postmarginalis überragt, Recurrens gerade, die Richtung der Radialis fortsetzend und gegen die Basalis gerichtet, der Marginalis gleich. Petiolus schwach gebogen, runzelig, 4—5-mal so lang wie dick, wenig kürzer als das Abdomen, dieses beim ♀ spindelförmig, hinteres Drittel seitlich schwach zusammengedrückt, 3.—6. Tergit klein, 7. länger, Bohrer weit vorstehend; Abdomen des ♂ fast spindelförmig, Hinterende weder eingebogen noch seitlich zusammengedrückt. Länge: 2, 5—3 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons and forest above, IX. 1908, 6 ♂; low coconut-planted country near coast, Pointe Étienne, 17. IX. 1908, 1 ♀. Mahé: near Morne Blanc, X. 1908, 1 ♂; high forest of Morne Blanc and Pilot, XI. 1908, 1 ♂; high forest behind Trois Frères, 14. I. 1909, 1 ♀; Mare aux Cochons district, 1—2000 feet, I. 1909, 1 ♂; Cascade Estate, 1—2000 feet, II. 1909, 2 ♂.

VII. Platygasteridæ.

Amblyaspis Förster, Hym. Stud. ii. 1856, pp. 107 & 112.

Scutellum spitz keglig ..... 63. *A. flavosignatus*, n. sp.
Scutellum halbkreisrund, mit einer Mittellängsleiste .....64. *A. bifoveatus*, n. sp.

63. *Amblyaspis flavosignatus*, n. sp. (Text-fig. 5.)

♂. Schwarz, glatt, kahl und glänzend; Mandibeln rot, Scapus, Coxæ und Beine sowie die Behaarung des Scutellum und des Mediansegments gelb. Kopf breiter als der Thorax, wenigstens 3-mal so breit wie lang, oben fast schneidig, hintere Ocellen vom Augenrand nur um ihren Durchmesser entfernt. Mandibel mit 2 dreieckigen Zähnen am abgestutzten Ende. Antennen 9-gliedrig, Scapus proximal etwas verengt, so lang wie die 3 folgenden Glieder zusammen, 2. Glied doppelt so lang wie dick, 3. in der Mitte verdickt, schwach gekrümmt, 4-mal so lang wie dick, 4. an beiden Enden kaum schmaler, 3-mal so lang wie dick, 5.—8. verlängert, 4—5-mal so lang wie dick, von der Mitte bis zum Proximalende allmählich verengt, am Distalende plötzlich in einen Stiel endigend, welcher fast doppelt so lang wie dick ist, 9. Glied um $\frac{1}{3}$ länger als das 8., walzenrund (fig. 5); Haare abstehend, bedeutend länger als die Dicke der Glieder. Thorax länglich, Mesonotum wenig gewölbt, ohne Furchen. Scutellum gewölbt, länger als breit, spitz keglig, seitlich und hinten sowie das Mediansegment gelb pubeszirt. Flügel bräunlich, lang bewimpert. Sporn der vorderen Tibien dreispaltig. Abdomen so lang wie der übrige Körper, flach, spatelförmig, Petiolus länger als breit. Länge: 1,5 mm.

Fig. 5. Die zwei Endglieder der Antenne von *Amblyaspis flavosignatus*, n. sp.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons, IX. 1908, 2 ♂.

64. *Amblyaspis bifoveatus*, n. sp.

♀. Schwarz, glatt, glänzend und kahl; Antennen, ausgenommen die Keule, Coxæ und Beine gelb. Kopf wie bei voriger Art. Antennen 10-gliedrig, Scapus über der Mitte stark verdickt, am Distalende plötzlich in ein queres Stielchen verengt, proximal allmählich verengt, 2. Glied fast umgekehrt keglig, 2-mal so lang wie dick, 3. umgekehrt keglig, schmaler als die übrigen, nicht länger als dick, kaum halb so lang wie das 2., 4. doppelt so lang wie dick, fast walzenförmig, so lang wie die zwei folgenden zusammen, 5. und 6. nicht länger als dick, so dünn wie das 3., 7.—10. eine gleichdicke Keule bildend, voneinander durch ein queres Stielchen getrennt, das 7. wenig länger als dick, umgekehrt keglig, 8. und 9. kaum so lang wie dick, walzenrund, 10. eirund; Haare abstehend, kürzer als die Dicke der Glieder. Thorax wie bei voriger Art; Scutellum halbkreisförmig, fast flach, gelb pubeszirt, von einer unbehaarten Mittellängsleiste durchzogen, welche vom Hinterrand des Mesonotum ausgeht und von letzterem nicht getrennt ist, beiderseits dieser Leiste zeigt das Mesonotum, am Hinterrand, je eine grosse, gelb pubeszirte, kreisrunde Grube. Flügel glashell, nicht bewimpert. Abdomen flach gedrückt, spatelförmig, Petiolus grau pubeszirt, so lang wie breit, 2. Tergit die Mitte des Abdomen überragend, die 4 folgenden gleichkurz, das 7. etwas länger als das vorletzte. Länge: 1,5 mm.

Vorkommen. Seychellen-Inseln. Mahé: slopes of Morne Seychellois, about 1500—2000 feet, 4. II. 1909, 1 ♀.

Platygaster Latreille, Gen. Crust. et Ins. iv. 1809, p. 31.

Petiolus so lang wie breit, kaum pubeszirt ..... 65. *P. mahensis*, n. sp.

Petiolus quer, mit einem dichten, grauen Haarfilz ..... 66. *P. seychellensis*, n. sp.

65. *Platygaster mahensis*, n. sp.

♀. Schwarz, glatt und glänzend; die 3 ersten Antennenglieder, Coxæ und Beine gelb. Kopf gestaltet wie bei vorigen Arten, Ocellen in flachem Bogen, die äusseren um ihren doppelten Durchmesser vom Auge getrennt. Antennen 10-gliedrig, Scapus länger als die 4 folgenden Glieder zusammen, 2. Glied doppelt so lang wie dick, 3. das dünnste, umgekehrt keglig, so lang wie dick, 4.—6. so dick wie das 2., nicht länger als dick, Keule gleichdick, 4-gliedrig, das 1. Glied etwas länger als dick, die 2 folgenden nicht länger als dick, alle drei am Ende schwach nach aussen verlängert, das 4. länglich, alle 4 durch ein queres Stielchen voneinander getrennt. Thorax etwas länger als hoch, Mesonotum stark gewölbt, ohne Spur von Furchen, Scutellum kissenartig gewölbt, fast halbkreisrund. Flügel glashell, nicht bewimpert. Sporn der Vordertibien dreispaltig. Abdomen so lang wie der Thorax, flach gedrückt, spatelförmig, Petiolus so lang wie dick, fast kahl, Metapleure stärker grau pubeszirt. Länge: 0,8 mm.

Vorkommen. Seychellen-Inseln. Mahé: Cascade Estate, 800—1500 feet, 1909, 1 ♀.

66. *Platygaster seychellensis*, n. sp.

♀. Schwarz; Antennen mit Ausnahme der Keule, Coxæ und Beine gelb. Kopf breiter als der Thorax, oben fast schneidig. Scapus so lang wie die 5 folgenden Glieder

zusammen, 2. Glied doppelt so lang wie dick, 3. das dünnste, nicht länger als dick, umgekehrt keglig, 4. und 5. so dick wie das 2. oder wie das 6., walzenförmig, etwas länger als dick, 6. fast kuglig, kaum so lang wie dick, die 4 Keulenglieder gleichdick, durch ein queres Stielchen voneinander getrennt, 7.—9. deutlich länger als dick, 10. wenigstens doppelt so lang wie dick. Thorax wie bei voriger Art. Flügel glashell, nicht bewimpert. Petiolus quer, mit dichtem grauem Haarfilz, Abdomen kaum länger als der Thorax, flach, hinten etwas zugespitzt. Länge: 0,8 mm.

Vorkommen. Seychellen-Inseln. Silhouette: Mare aux Cochons, IX. 1908, 1 ♀.

ERKLÄRUNG DER TAFELN 2 UND 3.

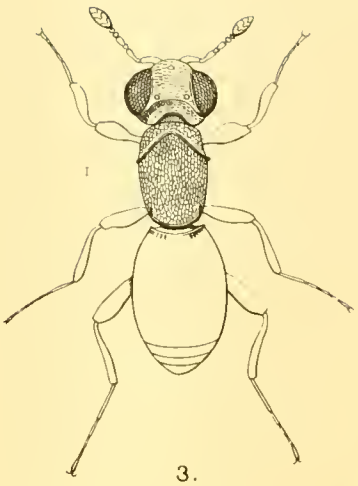
Tafel 2.

Fig. 1. *Mesodryinus mahensis*, n. sp. ♀.
Fig. 2. *Mesodryinus mahensis*, Vordertarsus.
Fig. 3. *Parabœus ruficornis*, n. g. et n. sp. ♀.
Fig. 4. *Odontacolus longiceps*, n. g. et n. sp. ♀.
Fig. 5. *Enneascelio exaratus*, n. g. et n. sp. ♀.
Fig. 6. *Oriscelio seychellensis*, n. g. et n. sp. ♀.

Tafel 3.

Fig. 7. *Macroteleia versicolor*, n. sp. ♀.
Fig. 8. *Neuroteleia rufa*, n. g. et n. sp. ♀.
Fig. 9. *Lamproteleia fasciatipennis*, n. g. et n. sp. ♀.
Fig. 10. *Paranteris nigraticeps*, n. g. et n. sp. ♀.
Fig. 11. *Schizopria fallax*, n. g. et n. sp. ♀.
Fig. 12. *Rhopalopria vulgaris*, n. g. et n. sp. ♀.
Fig. 13. *Diapria seychellensis*, n. sp. ♂.

1.



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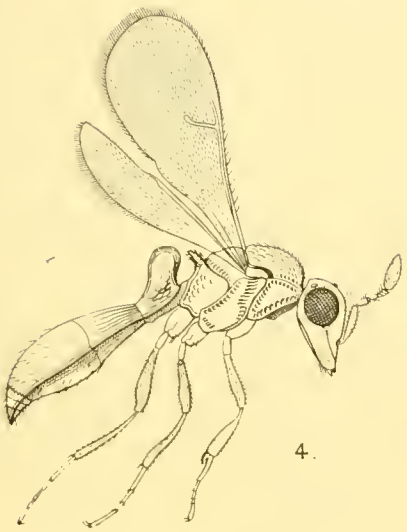

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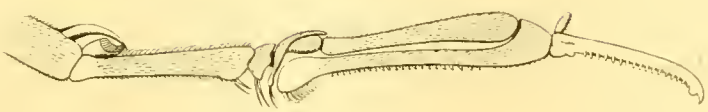

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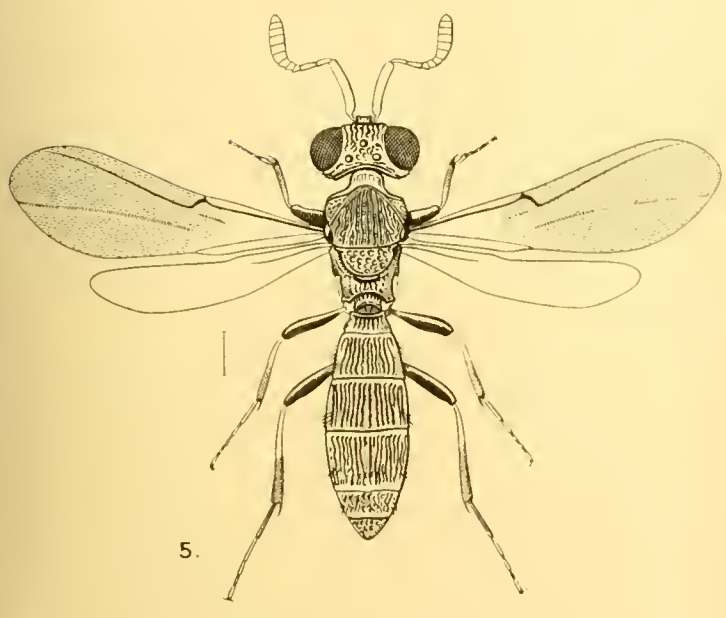

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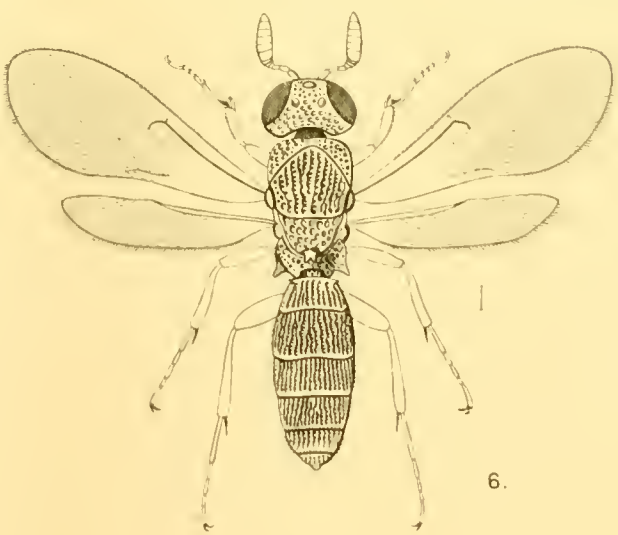

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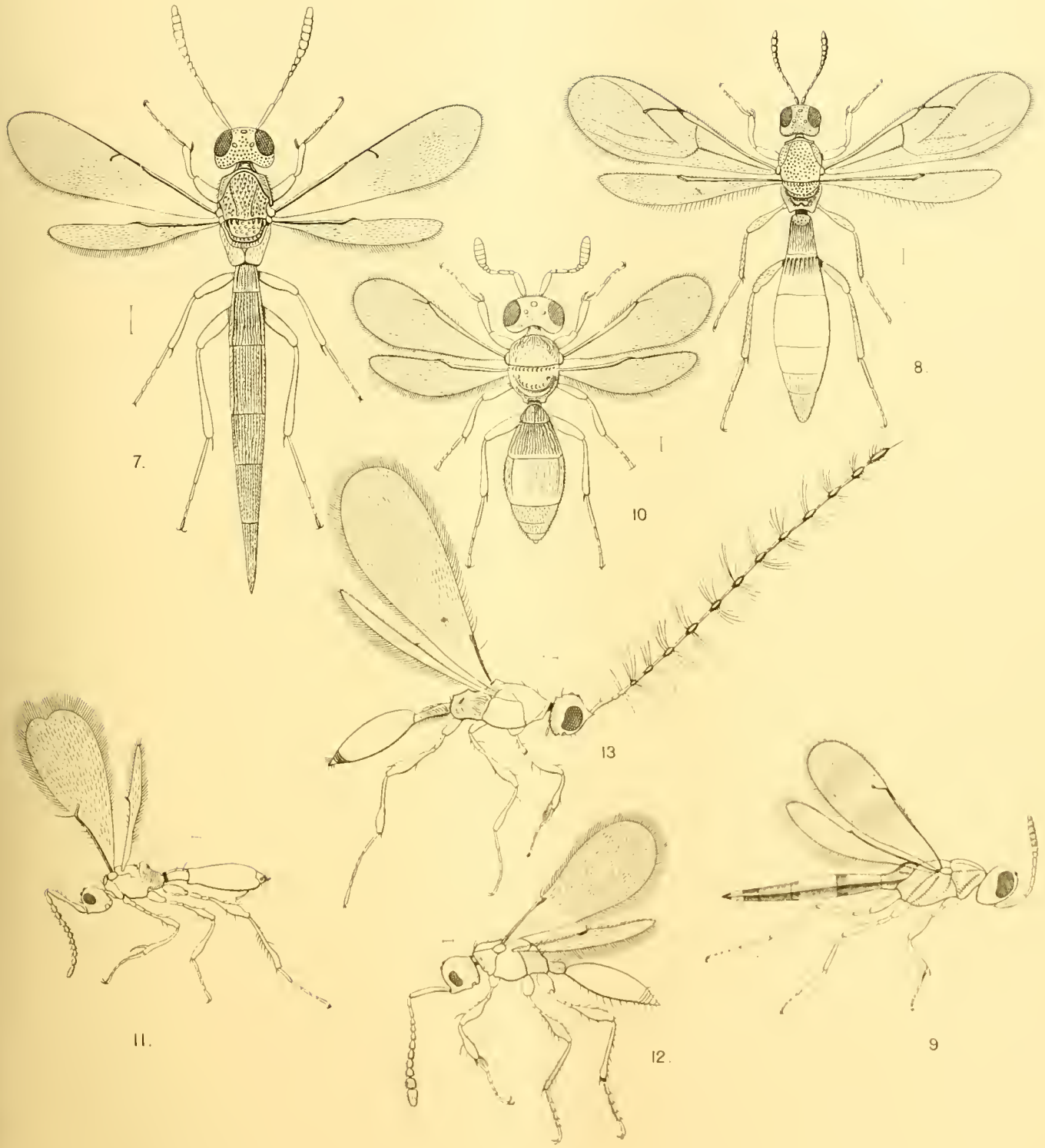
PROCTOTRUPOIDEA FROM SEYCHELLES



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PROCTOTRUPOIDEA FROM SEYCHELLES

No. V.—DIPTERA, CULICIDÆ.

By Fred. V. Theobald, M.A., F.E.S., etc.

(Plate 4 and Text-figures 1—12.)

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 15th June, 1911.

The following Report is drawn up from material collected by Mr Hugh Scott and Mr J. C. F. Fryer during the Expedition to the Seychelles and dependent Islands, such as Aldabra. So far only nine species of Culicidæ have been found on the Islands. One of these (undoubtedly a new species) was preserved only in spirit and cannot be described; from the wing scales and ♀ palpi it is evidently a *Tæniorhynchus* and of large size, but there are certain differences which may necessitate its being placed in a new genus when further material comes to hand. Of the other eight species five are new; one is a *Reedomyia*, another a *Culicelsa*, the third a *Culex*, the remaining two come in a new genus for which I propose the name of *Pseudoficalbia* on account of their general resemblance to the Indian Ficalbia.

In evident error I included *Ficalbia inornata* Theob. from the Transvaal and *Ficalbia nigripes* Theob. in the Asiatic genus; they are now seen to clearly come in *Pseudoficalbia*.

The other three previously known Culicids are *Stegomyia fasciata*, Fabricius, *Stegomyia scutellaris*, Walker and *Culex fatigans*, Wiedemann.

The latter was not obtained by the members of the Expedition, unless it occurs in some tubes of specimens preserved in alcohol, numbers of which have not been examined as it is merely guess work to identify a Culicid from such material. Specimens preserved in alcohol are most useful, if they can be definitely associated with dry specimens of the same species.

The same must be said of the larvæ collected, there being no reference as to which species they belong to. One, however, is figured, as Mr Hugh Scott thinks that it belongs to one of the new species described here.

Genus Stegomyia, Theobald.

Monog. Culicid. i. 283, 1901.

1. *Stegomyia fasciata* (Fabr.), 1805.

Culex calopus, Meig., 1818.
„ *frater*, Rob. Desv., 1827.
„ *mosquito*, Rob. Desv., 1827.
„ *tæniatus*, Wied., 1828.
„ *konoupi*, Brullé, 1832.
Culex toxorhynchus, Macq., 1838.
„ *annulitarsis*, Macq., 1848.
„ *formosus*, Walker, 1848
„ *viridifrons*, Walker, 1848.
„ *inexorabilis*, Walker, 1848.

Culex excitans, Walker, 1848.
„ *exagitans*, Walker, 1886.
„ *impatabilis*, Walker, 1860.
„ *zonatipes*, Walker, 1861.
„ *bancroftii*, Skuse, 1886.
Culex frater, Rob. Desv., 1827.
„ *mosquito*, Arrib., 1891.
„ *elegans*, Ficalbi, 1896.
„ *rossii*, Giles, 1899.
Stegomyia fasciata persistans, Banks, 1906.

(Fabricius, Syst. Antl. 36. 13 (1805); Theobald, Monog. Culicid. i. 289, 1901, iii. 141, 1903, iv. 176, 1907 and v. 158, 1910.)

Localities. Aldabra: Picard Island, 1908—9 (J. C. F. Fryer). Amirantes: Darros Island, 13. X. 1905. *Seychelles: Port Victoria (Dr Denman).

General distribution. South America, Central America, Southern and Central North America, West Indies; Ceylon, India, Malay States, China, Japan, Philippine Islands, East Indies; Australia; South, Central, North, East and West Africa; Southern Europe; Madagascar; Pacific Islands; Fiji; Mauritius; Sandwich Islands, etc.

An abundant and widely-spread household species which conveys yellow fever. More abundant in the new than in the old world.

2. *Stegomyia scutellaris* (Walker), (Text-fig. 1).

Culex scutellaris, Walker, 1859.
„ *variegatus*, Doleschall, 1858; (non Schrank, 1871; non Blanchard, 1852).
„ *albopictus*, Skuse, 1895.

(Walker, Journ. Linn. Soc. Lond., Zool. iii. 77, 1859; Theobald, Monog. Culicid., i. 298, 1901, iii. 144, 1903, iv. 179, 1907, v. 155, 1910.)

Localities. Seychelles: Mahé; marshes on coastal plain at Anse aux Pins, 1909; near Morne Blanc, about 800 ft., 1908; Cascade Estate, about 1000 ft.; Long Island, 1908; Capucin (R. P. Dupont)†; Port Victoria (R. P. Dupont and Dr Denman)†;

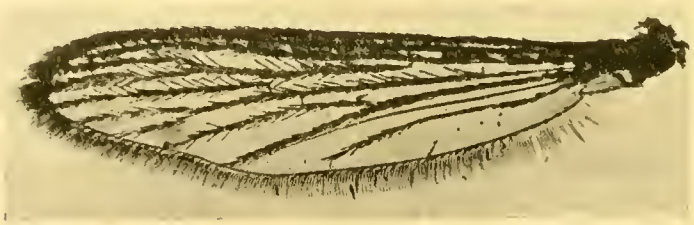


Fig. 1. *Stegomyia scutellaris* (Walker), ♀, wing.

Silhouette, low cultivated country, IX. 1908. Praslin, 1908. Dennis Island, 1908. Coetivy, 10. V. 1905. Amirantes: Desroches Island, 15. VIII. 1905. Chagos: Peros Banhos Atoll (Diamant Island, 19. V. 1905).

General distribution. Ceylon, India, Malay States, China, East Indies, Japan, Formosa, Philippine Islands, Mauritius, Sandwich Islands.

Note. Mr Scott gives the following notes: "Bites in daytime"; "some bite in forests in daytime." Some of the specimens were taken in 1905 on the H.M.S. "Sealark" Expedition.

* This record was included in the Monograph of the Culicidæ of the World.
† These records were originally given in the Monograph of Culicidæ of the World.

This species is widely distributed over Asia and the East Indies, where it largely takes the place of *Stegomyia fasciata* (Fabr.).

The species in the Fiji Islands and the Pacific Islands is not as I recorded (Monog. Culicidæ, v. p. 155) this insect, but a distinct species known as *Stegomyia pseudoscutellaris* Theobald (The Entomologist, June 1910, p. 156).

True *scutellaris* have white puncta on the pleuræ, *pseudoscutellaris* has prominent white lines.

The single median white thoracic line is the same, however, in both species and thus they may easily be confused.

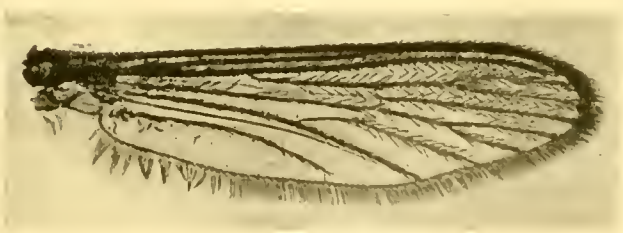
Genus Reedomyia, Ludlow.

Ludlow, Canad. Ent., xxxvii. 94, 1905; Theobald, Monog. Culicid., iv. 257, 1907, v. 252, 1910.

3. *Reedomyia seychellensis*, nov. sp. (Plate **4**, figs. 1, 2 and Text-fig. 2).

Thorax rich brown with some scattered golden scales; scutellum with flat white scales; pleuræ pale brown with patches of flat creamy scales. Head with a prominent dark spot on each side. Abdomen black, second to fourth segments with narrow basal

A.



B.

Fig. 2. *Reedomyia seychellensis*, nov. sp. A. Wing of ♀. B. Wing of var. *similis*.

white bands, small basal lateral white spots; venter with broad basal white bands. Legs brown, unbanded, venter of femora creamy, an apical creamy spot on femora and a broader apical pale band to the tibiæ, most prominent on the hind legs.

♀. Head (Plate **4**, fig. 1) dark, clothed with narrow-curved pale golden scales in the middle, which show brown tinges in front, upright black forked scales behind and a few thin upright long brown forked scales in front, a large patch of flat black scales on each side followed by flat creamy scales which partially surround the dark area posteriorly, chætæ black; clypeus nude, black; palpi small, densely clothed with black scales and with black chætæ; proboscis normal brownish-black. Thorax deep rich brown, with small

narrow-curved bronzy-brown scales and some scattered pale golden ones, some broader creamy ones in front near the head; chætæ dark brown to black; scutellum (Plate 4, fig. 2) pale brown clothed with flat silvery white scales and some similar coloured small narrow-curved ones along the posterior border, posterior border-bristles long rich brown, six large ones to the mid lobe in two groups and one smaller between, some very short pale golden hairs between them; metanotum brown; pleuræ pale brown with three patches of flat creamy scales, two large and one small. Abdomen black, the basal segment dark, the second, third and fourth with basal white bands and traces on the fifth, all the segments with basal lateral white spots, border bristles pale golden; venter dark but with very broad basal white bands.

Legs deep brown, unbanded; femora pale beneath, except just at the apex, a small apical pale band, tibiæ dark with a broad apical white band and with pale bristles, first tarsal segments with pale bristles; fore and mid ungues equal and uniserrate, hind equal and simple (?).

Wings (Text-fig. 2 A) with brown scales, the first submarginal cell longer, but no narrower than the second posterior cell, its stem rather more than half the length of the cell, its base slightly nearer the apex of the wing than that of the second posterior cell, stem of the latter not quite so long as the cell; mid cross-vein large, the posterior considerably shorter than the mid and about twice its own length distant from it; halteres pale ochreous.

Length. 3 to 4 mm.

Localities. Seychelles: Dennis Island, VIII. 1908 (J. C. F. Fryer); Silhouette, high forest, VIII. 1908 (H. Scott); Mahé, near Morne Blanc, X.—XI. 1908 (H. Scott). Aldabra: Takamaka (J. C. F. Fryer, 1908—9).

Observations. Described from five perfect females. It is easily distinguished from the other known *Reedomyia* by the pale apex of the femora and tibiæ, by the apex of the abdomen not being white, and from its nearest ally *R. neobiannulata*, Theob. (from West Africa) by the hind tibial bands being much more prominent and no white scaled spot at the base of the wings.

In the previously described species of this genus I did not notice the small narrow-curved scales at the posterior border of the scutellum plainly seen in the Seychelles insect.

One small female shows two obscure thoracic pale golden-scaled spots on the middle of the mesonotum and traces of two anteriorly, but the general characters are such that it cannot be accepted as a distinct species. It is one of two specimens from Aldabra, the other quite as in the type. (= var. *similis*, Text-fig. 2. B.)

Genus Culicelsa, Felt.

Felt, Bull. 79, Ent. 22, N. York State Mus. 391. 6, 1904; Theobald, Monog. Culicid. iv. 377, 1907, v. 315, 1910.

4. *Culicelsa fryeri*, nov. sp. (Text-fig. 3).

Thorax deep rich brown with some golden scales forming four obscure spots and presenting linear arrangement; scutellum slightly paler scaled. Abdomen black with

basal white bands *with median* lateral white spots. Legs deep brown with scattered golden scales in certain lights, golden chætæ on the tibiæ; tarsi with basal white bands on all segments of the hind legs, on all but the last in the mid and all but last two in the front.

♀. Head black with creamy yellow scattered narrow-curved scales and numerous black upright forked scales over most of the surface, a small patch of flat grey scales anteriorly at the sides, with dusky ones behind and laterally, golden to creamy narrow-curved scales around the eyes; chætæ deep brown with golden sheen apically; clypeus bright brown, slightly acuminate; proboscis deep brown with scattered yellowish scales on the basal half; antennæ brown, basal segment bright pale brown, some scanty dark scales basally.

Thorax deep rich brown with scattered small pale golden narrow-curved scales, which are more dense in two patches in front and on the middle of the mesonotum, forming indistinct spots (the median most prominent) and around the front, there are also traces of linear arrangement in certain lights, chætæ rich brown with golden reflections;

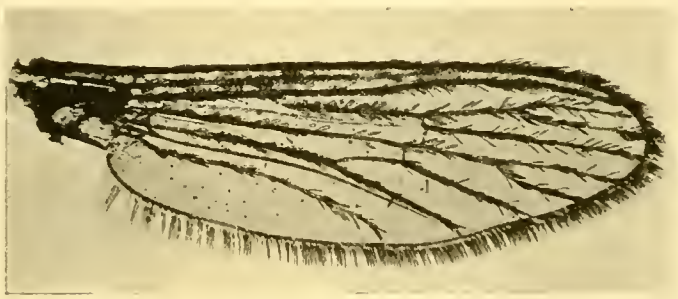


Fig. 3. *Culicelsa fryeri*, nov. sp., ♀, wing.

scutellum brown with almost cream-coloured narrow-curved scales, which spread into the mesonotum, border bristles rich brown; metanotum brown; pleuræ brown with creamy puncta of flat scales.

Abdomen black, banded, the basal segment with white scales laterally and in the middle, dark scales apically in the middle; second to fifth segments with basal white bands which on the second and fifth spread outward slightly in the middle line, the fifth segment with a narrow band of apical creamy scales and the sixth with ochreous yellow median scales and a similar coloured apical band, all the segments with median lateral white spots, most prominent on the fifth and spreading on to the dorsum; border bristles pale golden brown; venter mostly white scaled, with narrow dark apical bands.

Legs banded, dark brown with scattered golden scales on the femora and tibiæ and a few on the first tarsal segment, femora mostly pale scaled beneath, apex of femora and tibiæ yellow, base of first, second and third front tarsals with narrow white bands, last two dark, in mid legs the fourth has also a narrow white band, in the hind legs all the tarsals have broader basal white bands; femora, tibiæ and to some extent the first hind tarsals with golden bristles; ungues, equal and uniserrate on fore and mid legs, equal and simple on hind. Wings (Text-fig. 3) with mottled scales; scales on the basal half of the wing rather broad and spatulate, lateral vein scales thinner past the cross-veins; fork-cells

short, the first slightly longer and much narrower than the second, its stem nearly two-thirds the length of the cell, its base if anything slightly nearer the apex of the wing than that of the second fork-cell, stem of the latter nearly as long as the cell; mid cross-vein longer than either the supernumerary or the posterior, the latter about its own length distant from the mid cross-vein.

Halteres pallid.

Length. 3·5 to 4 mm.

Locality. Aldabra: Takamaka (J. C. F. Fryer), 1908—9.

Observations. Described from a series of nine females. There is some slight variation in the thorax, some showing a more uniform appearance than others. The abdomen also varies, some showing extra and more prominent median extensions of the basal white bands, but the median lateral white abdominal spots, the scattering of golden scales on the thorax and legs and the mottled wings should at once separate it.

In some respects (*i.e.* wings) it bears some resemblance to a *Grabhamia*.

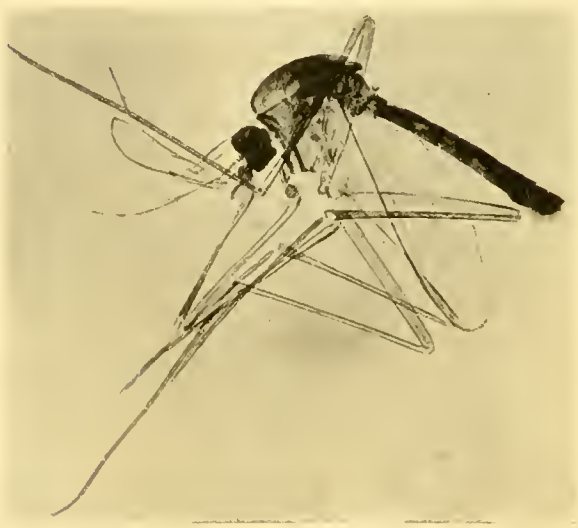


Fig. 4. *Culex scottii*, nov. sp., ♀.

Fig. 5. *Culex scottii*, nov. sp., head of ♂.

Genus Culex, Linnæus.

Linnæus, Linn. Syst. Nat. Ed. x., 1758, 602; Theobald, Monog. Culicid. i. 326, 1901, iii. 157, 1903, iv. 387, 1907, v. 322, 1910.

5. *Culex scottii*, nov. sp. (Plate **4**, fig. 3 and Text-figs. 4—7).

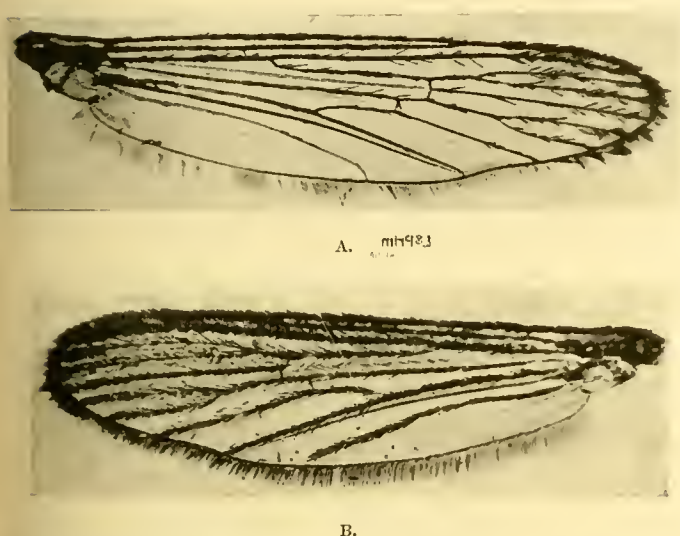
Head brown with golden scales; palpi and proboscis brown; thorax deep rich brown with two double median parallel golden-scaled lines and a curved lateral golden scaled line, acutely bent in at the middle of the mesonotum and a short golden scaled line over the root of each wing, sharply defining off two prominent anterior deep brown areas, two narrower posterior ones and a thin median area.

Abdomen unbanded but with basal lateral yellow spots. Legs unbanded, apex of femora and tibiæ pale, venter of femora pale.

♀ (Text-fig. 4.) Head brown, with dense narrow-curved pale golden scales, rich golden upright forked scales in the middle, dark ones at the sides and flat pale creamy scales laterally, chætæ brown with golden reflections; clypeus, palpi and proboscis deep brown; antennæ brown, basal segment bright ochreous.

Thorax (Plate 4, fig. 3) deep rich brown with narrow-curved almost hair-like scales, ornamented as follows with golden and rich bronzy brown—two submedian golden-scaled parallel lines in front, each with a faint median dividing darker line, a curved line of similar coloured scales on each side, but brighter, bent inwards about the middle of the mesonotum and continued backwards parallel with the two submedian lines, another short line in front of the roots of the wings; chætæ dark brown with golden reflections; scutellum brown with narrow-curved pale scales and with eight posterior border bristles; metanotum deep brown; pleuræ deep brown with three patches of dull grey flat scales.

Abdomen black, unbanded, with golden posterior border bristles; laterally are basal golden yellow to creamy spots, venter with similar coloured basal bands, pale at the base.



A.

B.

Fig. 6. *Culex scottii*, nov. sp. A. Wing of ♂. B. Wing of ♀.

Fig. 7. *Culex scottii*, nov. sp., genitalia of ♂.

Legs dark brown, venter of femora, except near apex, pale creamy, a pale spot at the apex of femora and a more prominent one at apex of tibiæ, especially on the hind legs; ungues equal and simple.

Wings (Text-fig. 6 B) with the apices of the veins densely scaled, with long thin lateral scales, fork-cells long, the first submarginal much longer and a little narrower than the second posterior cell, its base much nearer the base of the wing than that of the latter, its stem very short, less than one-fifth the length of the cell; stem of the second fork-cell a little more than half the length of the cell; posterior cross-vein sloping backwards, nearly twice its own length distant from the mid cross-vein.

Halteres with pale stem and fuscous knob with some grey scales.

Length. 3·5 to 4·5 mm.

♂. Head (Text-fig. 5) with narrow-curved pale golden yellow scales, black upright forked scales except in front, where they are rich golden, flat creamy-coloured scales laterally, chætæ brown and golden brown, bright golden in the middle; palpi thin, acuminate, longer than the proboscis by the last segment, which is a little longer than the penultimate one, brown, a narrow pale almost white band towards the base, and a small one at the base of the last two segments, last two segments with long brown hairs on each side; antennæ banded brown and white, plume hairs very fine and brown.

Thorax as in the ♀. Abdomen black with traces of yellow basal bands (in some lights these are almost white) on third, fourth and fifth segments, a few yellow scales on the second, the apical segments with long lateral patches of yellow scales; border bristles and lateral hairs pale brown and golden; venter mostly yellow-scaled, narrow black bands to the last one or two segments. Male claspers (Text-fig. 7) simple, rather broad, with a short subapical terminal segment, foliate plate normal.

Legs brown, unbanded, venter of femora pale, a pale spot at apices of the femora and tibiæ. Fore and mid ungues unequal uniserrate, hind equal and simple.

Wings (Text-fig. 6 A) with rather long fork-cells, the scales broader than in the ♀, first fork-cell much longer and narrower than the second fork-cell, its stem one-fourth the length of the cell, its base considerably nearer the base of the wing, stem of the second fork-cell about two-thirds the length of the cell, posterior cross-vein about the same length as the mid and about twice its own length distant from it.

Length. 4·5 mm.

Localities. Seychelles: Mahé and Silhouette, 1908—9 (H. Scott).

Observations. Described from a series of 41 ♀s and 3 ♂s.

The following notes sent with them:—"Mahé, Cascade Estate, about 1000 feet, calmer and wetter season X. 1908 and XI. 1909. Come into house at evening, especially when lamps are lighted"; "Mahé near Morne Blanc, 1000 feet X.—XI. 1908, come into house when lamp is lighted and bite"; "Silhouette forests about 1000 feet and more, trade wind season VIII.—IX. 1908, come in evening when there is lamplight and bite; on very windy evenings much less numerous."

There is not much variation in the specimens, but some do not show the thoracic ornamentation as clearly as others. Its marked thoracic appearance and unbanded abdomen in the female will at once separate it from other Culices. The male shows abdominal banding, but again the thoracic ornamentation is very marked.

6. *Culex fatigans*, Wiedemann, 1828.

Culex æstuans, Wied., 1828.
„ *pallipes*, Meig., 1838.
„ *anxifer*, Coq. (Bigot), 1859.
Heteronycha dolosa, Arrib., 1896.
Culex pungens, Wied., 1828?

(Wiedemann, Auss. Zweif. Ins. 10, 1828; Theobald, Monog. Culicid. ii. 151, 1901, iii. 225, 1903, v. 383, 1910.)

Localities. Seychelles: Port Victoria, Mahé (Dr Denman); Mahé (Mr Hugh Scott).

MARINE BIOLOGICAL LABORATORY WOODS HOLE LIBRARY MASS.

General Distribution. India, Africa, South Europe, Australia, South America, West Indies and most Oceanic Islands.

The common Brown Household Mosquito of the tropics and sub-tropics, its place taken in temperate and sub-Arctic regions by *Culex pipiens*, Linnæus.

Genus Tæniorhynchus, Arribalzaga, 1891.

Panoplites, Theobald, Monog. Culicid., ii. 173, 1901; iii. 269, 1903; iv. 494, 1907; v. 446, 1910. *Mansonia*, Blanchard, Compt. Rend. Soc. Biol., p. 1046, t. liii, 1901.

7. *Species?* (*probably new*).

Some spirit specimens (4), badly damaged and even the wings mostly denuded, with the following note :—"Mahé, Seychelles, cultivated low country (Barbarons). Given by Jules Michel, 1908."

The bracket-like wing scales remaining are longer than in any species I have seen, and the apical palpal segment is longer. A large mosquito 6 mm. long, certainly undescribed, and may possibly belong to a new genus near *Tæniorhynchus*.

A. B.

Fig. 8. *Pseudoficalbia pandani*, nov. sp. A. Male. B. Female.

Genus Pseudoficalbia, nov. gen.

Head covered with flat scales and some upright forked scales; palpi short in ♂ and ♀; proboscis in both sexes slightly swollen apically; ♀ antennæ pilose, ♂ antennæ plumose.

Thorax with long thin narrow-curved scales; scutellum with three patches of small flat scales and some small narrow-curved ones, on the posterior border; three border bristles to the mid lobe.

Male genitalia with short broad basal lobes and longish claspers.

Ungues of ♂ equal, simple and small on fore and hind legs, unequal and simple on mid pair. Fork-cells moderately long; wing scales as in Mimomyia.

This genus comes between *Ficalbia* and *Mimomyia*. From the former it can be told by the wing scales, and from the latter by the flat scutellar scales, which in Mimomyia are narrow-curved ones; the ♂ proboscis is also very different to that in Mimomyia.

Two other species must be placed in this genus, namely *Ficalbia inornata*, Theob.*, from the Transvaal, and *Ficalbia nigripes*, Theob.†, from Sierra Leone.

8. *Pseudoficalbia pandani*, nov. sp. (Plate **4**, fig. 4 and Text-figs. 8—10).

Head black; thorax bright ochreous with two dark parallel lines behind; scutellum ochreous with three black spots; metanotum ochreous with two parallel darker lines; pleuræ pale. Abdomen unbanded or with a variable number of white basal bands, venter pale. Legs uniformly dark brown.

A. B.

Fig. 9. *Pseudoficalbia pandani*, nov. sp. A. Head of ♂. B. Head of ♀.

♀ (Text-fig. 8 B). Head (Text-fig. 9 B) clothed with rather large flat black scales and a few black upright forked scales and with black chætæ; clypeus and palpi black, proboscis black, except apex which is pale; antennæ deep brown, basal segment black.

Thorax bright ochreous with scattered long black scales which form two distinct dark parallel lines behind, some smaller golden curved scales underlying them, chætæ long and black; scutellum pale ochreous with three patches of small rather elongate flat black scales and black border bristles, three to each lobe; metanotum ochreous with two broad darker lines; pleuræ pale ochreous.

Abdomen black, the fourth, fifth and sixth segments with narrow basal white bands; apex with numerous golden and brown bristles; posterior border bristles dark; venter pale.

* Theobald, The Entomologist, xli. 108, 1908.

† Monog. Culicid. iv. 578, 1907.

Legs deep blackish-brown with bronzy sheen, coxæ and trochanters ochreous, the former with black bristles; ungues small, equal and simple.

Wings (Text-fig. 10) with brown scales, outer costal border dark and spinose, first submarginal cell shorter and slightly narrower than the second posterior cell, its base nearer the apex of the wing, its stem not quite one and a half times the length of the cell; stem of the second posterior cell slightly longer than the cell; posterior cross-vein slightly longer than the mid, about half its own length distant from it; the sixth long vein bends abruptly to the costa and has only a single row of scales.

Halteres with pale stem and fuscous knob.

Length. 2·5 to 3 mm.

♂ (Text-fig. 8 A). Head (Text-fig. 9 A), thorax and abdomen similar to the ♀, but the abdominal banding indistinct. Palpi and proboscis black, the latter slightly swollen apically, not quite so much as in the ♀; palpi very short, clavate with a few black bristles; antennæ plumose banded grey and brown, hairs flaxen brown, the brown area of each segment nearly twice as long as the grey.

Wings (Text-fig. 10 C) with similar scales to the ♀; fork-cells short, the first slightly shorter and narrower than the second, its base the nearer to the apex of the wing, its stem nearly twice as long as the cell; stem of the second fork-cell about one-third longer than the cell; supernumerary cross-vein slightly angulated, the posterior about the same length as the mid and about its own length distant from it; the first and second long veins lie close together.

Legs as in ♀; fore ungues small, equal and simple, the mid unequal, simple, one curved, one small and straight; hind equal and simple, small.

Genitalia (Plate **4**, fig. 4) with short, thick basal lobes, claspers long and acuminate; setiferous lobe dark, with some long fine hairs and a single pale long sword-like bristle.

Length. 3·5 mm.

Locality. Seychelles: Mahé, 1908—9.

Observations. Described from a series of 16 ♀s and 4 ♂s. The following notes are appended:—"Mahé, forest behind Cascade about 1500 feet, II. 1909. Caught in morning flying amongst dead leaves of *Pandanus hornei* on ground under a large group of those trees; never noticed them try to bite"; "Mahé, Jan. 1907, calm and wetter season. Swept in daytime from low herbage at places near sea level (Anonyme Island and Anse aux

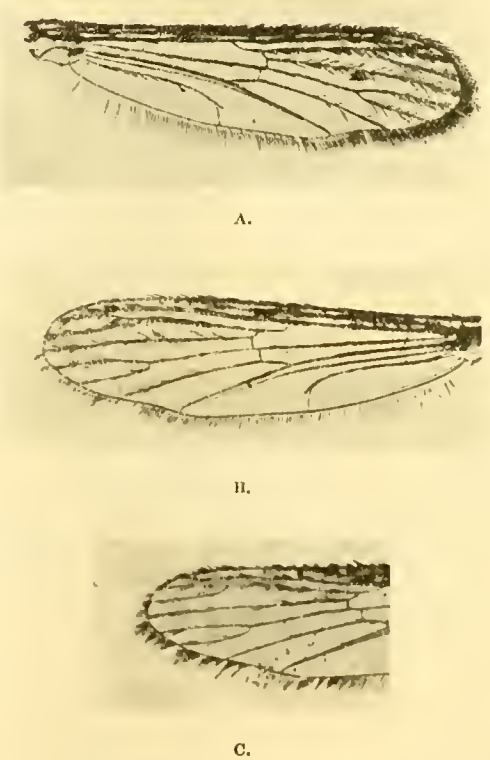


Fig. 10. *Pseudoficalbia pandani*, nov. sp.; A, wing of ♀ with banded abdomen; B, wing of ♀ with abdomen scarcely banded; C, apex of ♂ wing.

Pins coast marsh)"; "Mahé, Mare aux Cochons, 1500 feet. From swampy place with half dried up pools amongst dead *Pandanus Hornei* leaves. Caught in daytime."

Quite a distinct small species which, however, bears a strong resemblance to *Pseudoficalbia nepenthes*. The marked difference in the venation can, however, be seen by comparing the photos of the wings. Probably it breeds in water collected in the bases of *Pandanus* leaves.

There is some colour variation in the series. In some the abdominal banding is very faint, frequently due to partial scale denudation, however, and in others the metanotum varies, two marked varieties being the following:—

Variety I. Metanotum all ochreous, the black knobs of the halteres showing as two black spots over it.

Variety II. Metanotum all black, abdomen with only trace of banding.

It comes very near *Pseudoficalbia nigripes*, Theobald (Monog. Culicid. iv. 578) which I placed in error in the genus *Ficalbia*, Theob. It can be told at once from it by the long dark thoracic scales.

9. *Pseudoficalbia nepenthes*, nov. sp. (Plate **4**, figs. 5, 6 and Text-figs. 11, 12).

Head black, thorax bright ochreous with indistinct dark lines and three black spots on the pale scutellum; metanotum pale ochreous. Abdomen black with basal white bands,

Fig. 11. *Pseudoficalbia nepenthes*, nov. sp., ♀; wing.

except on the first and second segments. Legs bronzy black, unbanded. Proboscis black, slightly swollen in ♀ towards the apex; palpi and antennæ black. Wings with dark veins.

♀. Head clothed with flat black scales and black upright forked scales and black chætæ; clypeus and proboscis black, the latter swollen towards the apex; palpi very small, black; antennæ deep brown, basal segment black, a few small black flat scales. Eyes violet. Thorax bright ochreous with scattered long thin black scales and long black bristles which have golden apices in certain lights; on the integument can be seen three slightly darker parallel longitudinal lines; scutellum bright ochreous with three patches of small flat black scales, forming three marked dark spots; posterior border bristles black, four large ones to the mid lobe, three large and some smaller ones to the lateral lobes. Metanotum bright ochreous; pleuræ bright ochreous.

Abdomen black, the segments except the first and second with basal white bands; posterior border bristles golden and brown, many golden bristles apically; venter black and white banded.

Legs black with bronzy reflections and with golden bristles; ungues small.

Wings (Text-fig. 11) with typical large brown Minomyian scales, costa dark, spiny; first submarginal cell not quite as long and narrower than the second posterior cell, its stem not quite twice as long as the cell, base of the cell nearer the apex of the wing than that of the second posterior cell, stem of the latter slightly longer than the cell; posterior cross-vein rather more than its own length distant from the mid cross-vein; sixth vein abruptly bent at the apex which is devoid of scales, from the bend scales project outwards.

Halteres with pale stem and black knob.

Length. 3 mm.

Locality. Seychelles: Silhouette, 1908.

Observations. Described from a single perfect ♀, taken in highest damp forests (over 2000 ft.), 29. VII. 1908, found sitting in *Nepenthes* pitcher which contained Culicid larvæ. It is a very marked black and ochreous species, with large black thin thoracic scales and slightly longer fork-cells than in the previous species. The larvæ described here taken from the pitchers of *Nepenthes* upon which the adult was caught may belong to this species.

Larva (Text-fig. 12 A) 4 to 4·5 mm. long. Head (Plate **4**, fig. 6 A) longer than broad; antennæ (Plate **4**, fig. 6 C) rather short and thick, of two segments, ending in three rather broad spines with tapering apices and a small foliate plate; labial plate (Plate **4**, fig. 6 B) nearly twice as long as broad; frontal prominence (Plate **4**, fig. 6 D) with two short, broad acuminate processes and two long chætæ projecting forwards behind them; mandibles (Plate **4**, fig. 6 C) serrated as shown in figure.

A.

B.

Fig. 12. *Pseudoficalbia nepenthes*, nov. sp.; A, larva; B, pupa.

Thorax broader than the head, but only a little longer, with a pair of long dark bristles on each side in front, followed by two groups of three bristles on each side, three lateral tufts arising from a distinct prominence, also chætæ on the dorsum. The first two abdominal segments have each a pair of long dark chætæ laterally, the third to sixth a single dark chæta on each side, seventh and eighth apparently nude; siphon (Plate **4**, fig. 5 A) very short and thick, no longer than the terminal segment (Plate **4**, fig. 5 B) which has two tufts of long brown hairs and two pairs of globular processes.

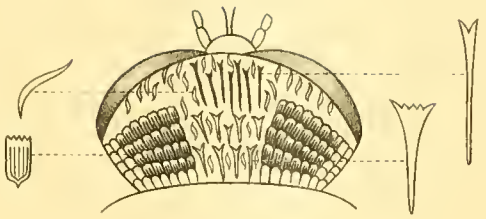
Pupa (Text-fig. 12 B), 4 mm. Siphons rather short of marked form (*vide* figure),

anal plates short and broad, flat and overlapping, minutely serrated at their borders, with a dark spot on the middle of the posterior borders and a marked central rib; a single long black lateral chæta on each of the first three segments, a pair of ventral ones on each side of the fourth and fifth, a single one on the remainder, on the fourth two long chætæ on the posterior border on each side, one on each side of the fifth and a very short one on each side of the sixth; a tuft of short chætæ on the dorsum of the first.

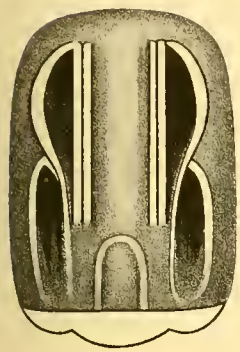
This larva and pupa taken in *Nepenthes* pitchers where *Pseudoficalbia nepenthes* was caught may belong to that species, Mr Scott informs me. It is a marked type of larva.

EXPLANATION OF PLATE 4.

1. *Reedomyia seychellensis*, nov. sp., ♀; head.
2. *Reedomyia seychellensis*, nov. sp., ♀; scutellum.
3. *Culex scottii*, nov. sp., ♀; thoracic adornment.
4. *Pseudoficalbia pandani*, nov. sp., ♂; genitalia.
5. *Pseudoficalbia nepenthes*, nov. sp., larva; *a*, larval siphon and terminal segment; (hairs cut off); *b*, the same (reduced) showing normal hairs.
6. *Pseudoficalbia nepenthes*, nov. sp., larva; *a*, head; *b*, labial plate; *c*, antenna; *d*, frontal prominence; *e*, mandible.



1.



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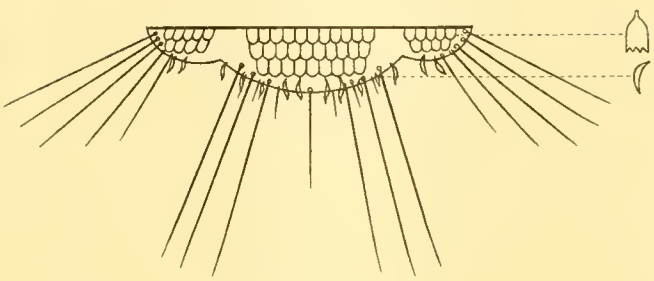
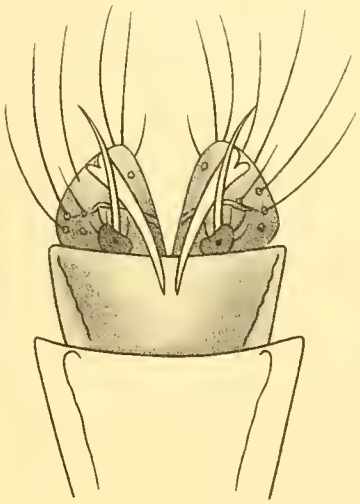


2.



4.

5b.

5a.

6d.

6c.

6a.

6b.

6e.

E. Wilson lith.

No. VI.—DIPTERA, STRATIOMYIIDÆ.

Von Dr K. Kertész (*Magyar Nemzeti Muzeum, Budapest*).

(Textfiguren 1—4.)

(Mitgeteilt von Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Gelesen den 19. Januar 1911.

Pachygastrinæ.

Wallacea, Dol., Natuurkund, Tijd. Ned. Ind., Ser. 4, iii. (xvii.), 82. 1858.

1. *Wallacea albopilosa*, Meij., ♂♀, Tijdschr. Ent. l. 238. 3. 1907.

Die Exemplare stimmen mit dem typischen Weibchen, das ich Herrn Meijere verdanke, vollkommen überein, nur sind sie etwas grösser (3.6 mm.) und das Toment des Thoraxrückens ist ganz deutlich gelb.

Fundorte. Seychelles: Mahé; Cascade Estate, 800—1500 Fuss, III. 1909; Mare aux Cochons, 1500 Fuss, II. 1909. Java.

Lophoteles, Loew, Berl. Ent. Zeit. ii. 110, 1858.

2. *Lophoteles plumula*, Loew, ♂♀, *l.c.*, iii. tab. 1, fig. 16—18.

Fundorte. Seychelles: Silhouette, Plateau des Mare aux Cochons, 1700—2000 Fuss; Mahé, ungefähr 1000 Fuss, Morne Blanc und Pilot, IX.—XI.; Cascade Estate, 1909. Ins. Radak.

Tinda, Walker, Journ. Linn. Soc. London, iv. 101, 1860.

3. *Tinda modifera*, Walker, *l.c.*, ♂.

Fundorte. Seychelles, ein Männchen von Mahé. Ind. orient., Celebes, Java, Manila.

Nemotelinæ.

Brachycara, Thomson, Eugenies Resa, Dipt. 460, 1869.

4. *Brachycara ventralis*, Thomson, *l.c.*, 461, tab. 9, fig. 4.

Fundorte. Seychelles; Mahé, Anonyme Island, I. 1909. Neu Guinea; Cocos Keeling; Minikoi (in Cambridge Mus.).

Stratiomyiinæ.

EULALIA, Meig., Nouvelle Classification, 21. 28, 1800.

[*Odontomyia*, Meig., Illiger's Mag. f. Ins. ii. 265. 29, 1803.]

5. *Eulalia*? *aequalis* (Walk.).

Stratiomys aequalis, Walk., Journ. Linn. Soc., London, v. 271, 1861.

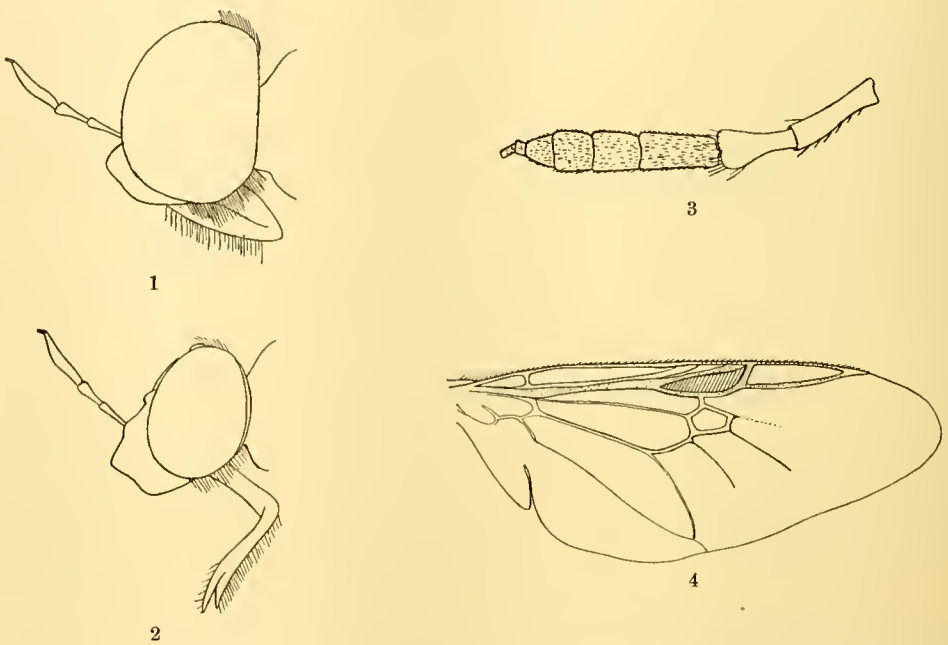
Walker's Beschreibung ist ziemlich gut auf die vorliegenden Exemplare anwendbar, doch is die Bestimmung ohne Vergleich der Type nicht gesichert.

Fundorte. Aldabra, neben Wilson's Well, XI. 1908, ein Pärchen (J. C. F. Fryer). Batjan.

CATATASIS, nov. gen.

Den Kopfbau und der Aderung der Flügel nach, steht die Gattung nahe zu *Eulalia* Meig.

Kopf (Fig. 1. 2) breiter als hoch (♂ 27 : 22 ; ♀ 22 : 16). Augen nackt, die des Männchens nur auf einer kurzer Strecke zusammenstossend, die des Weibchens durch



Figs. 1—4. *Catatasis clypeata*, nov. gen., nov. spec. 1. Kopf des Männchens von der Seite. 2. Kopf des Weibchens von der Seite. 3. Fühler. 4. Flügel.

die ca. den dritten Theil der Kopfbreite einnehmende Stirn (9 : 29) getrennt. Facetten beim Männchen grober als beim Weibchen. Untergesicht gewölbt, vorstehend, eine kurze stumpfe Schnauze bildend. Scheitel schwach entwickelt, Hinterkopf etwas ausgehöhlt. Schläfenrand nur beim Weibchen und auch da schwach entwickelt. Fühler (Fig. 3) auf die Unterseite des Kopfes gerückt, vorstehend, divergierend, ca. so lang wie der Kopf, in beiden Geschlechtern gleich gebaut. Das erste Glied verlängert, stabenförmig, das zweite nur etwas kürzer als das erste, gegen das Ende zu verdickt; Complex des dritten Gliedes länger als die zwei Basalglieder zusammen, die einzelnen

Glieder sehr undeutlich; Griffel sehr kurz. Nach einem mikroskopischen Präparate ist der Complex fünfringelig, sehr kurz, aber dicht behaart. Mundöffnung sehr gross; Rüssel stark entwickelt, gekniet. Thoraxrücken flachgewölbt, länger als breit. Schildchen schwachgewölbt, kurz, trapezförmig, etwas aufgerichtet, mit zwei divergirenden Dornen, deren Länge die des Schildchens fast erreicht. Hinterleib flach, von oben gesehen fast kreisförmig, breiter als der Thorax. Flügel (Fig. 4) über den Hinterleib hinausragend. Vorderast der Radialis vorhanden, in die Randader mündend, der Hinterast fehlt. Der obere Arm des Vorderastes der Discoidalis ist nur an der äussersten Basis deutlich, der untere Arm dagegen gut entwickelt; der Hinterast der Discoidalis fehlt vollständig; hintere Discoidalquerader vorhanden, wesshalb der schwache Vorderast der Posticalis aus der Basal-Discoidalzelle entspringen scheint. Beine einfach, ziemlich lang.

6. *Catatasis clypeata*, nov. spec. ♂♀.

♂. Fühler, Stirn und Hinterkopf schwarz. Untergesicht mehr schwarzbraun, Spitze der Schnauze hellbraun. Auf der Unterseite des Kopfes ziemlich lange gelbliche Haare. Thorax schwarz, der Rücken mit sehr dichter tomentartiger Behaarung bedeckt. Pleuren mit zerstreut stehenden weissen Haaren. Schildchen schwarz, mit gleichfärbiger ziemlich langer Behaarung. Dornen hellgelb. Hinterleib schwarzbraun, in der Mitte heller, ziemlich glänzend, an den Seiten mit langen gelblichweissen Haaren; an den Tergiten kurz dicht schwarz behaart, welche Behaarung aber die Grundfarbe und den Glanz garnicht alterirt. An den Sterniten sind die Haare gelblich. Beine hell bräunlichgelb, die Schienen, besonders auf der distalen Hälfte, dunkelbraun und die drei letzten Tarsenglieder fast schwarz. Auf der Unterseite der Vorderschenkel sind einige Reihen weicher gelblicher Haare sichtbar, deren Länge gegen die Spitze zu abnimmt; auf den Mittelschenkeln ist eine ähnliche Behaarung sichtbar, die Haare sind aber alle gleichlang; auf den Hinterschenkeln sind nur an der Basis einige Haare zu bemerken. Flügel ziemlich hyalin, mit hellbraunen Adern und gleichgefärbter Subcostalzelle. Schwinger gelb.

♀. Stirn glänzendschwarz, am Augenrande mit gelblichen Härchen; auf der Mitte beiderseits eine seichte Vertiefung und unter dieser je ein niederer Höcker; von den Höckern reicht eine rinnenartige Vertiefung bis zu den Fühlern. Der ganze vordere Theil des Untergesichtes ist hell bräunlichgelb, die Seiten glänzendschwarz, mit silberweisser Behaarung auf der Mitte. Thoraxrücken und Schildchen mit kurzem goldgelblichem, nicht sehr dichtem Tomente bedeckt. Hinterecken des 3—5 Ringes braungelb. Alle Beine hell bräunlichgelb, auch die Hinterschienen und von den Tarsengliedern sind nur die zwei letzten dunkelbraun, das drittletzte nur an der Spitze. Schwinger bräunlich, der Knopf grün.

Länge: 5—5·5 mm.; Flügellänge: 4·5 mm.

Fundorte. Seychelles: Mahé, Cascade Estate, *circa* 800 Fuss, II.—III. 1909: "hovers in shade under big trees" (H. Scott).

Sarginæ.

Sargus, Fabricius, Suppl. Entom. Syst. 549, 1798.

7. *Sargus* seychellensis*, nov. spec. ♂♀.

♂. Stirn ausserordentlich schmal, schwarz, wenig glänzend; die nackten Augen fast zusammenstossend. Stirndreieck und Untergesicht weiss, mit gleichfärbiger Behaarung. Im Profile betrachtet steht das Stirndreieck und das Untergesicht nur wenig vor. Die Punktaugen sitzen ganz hinten am Scheitel, das erste nur wenig vorgerückt. Punktaugenhöcker nur sehr wenig erhaben. Scheitel mit gelblichen Haaren, die Franze am hinteren Theil des Scheitels auch gelblich. Hinterer Augenrand nackt, nur am untersten Theil einige weisse Haare. Rüssel orangegelb, kurz weiss behaart. Basalglieder der Fühler gelblichweiss, der kleine Complex des dritten Fühlergliedes bräunlichgelb; die Borste fast endständig, am Spitzendrittel heller. Die Börstchen am oberen und unteren Theil des zweiten Fühlergliedes erreichen nicht die Spitze des Complexes. Hinterkopf stark ausgehöhlt, mattschwarz, in gewisser Richtung grau erscheinend. Thoraxrücken, Schildchen und Metanotum glänzend metallischgrün, in gewisser Beleichtung bläulichgrün, sehr fein punktirt, mit kurzer gelblicher Behaarung, der einige etwas längere Haare beigemengt sind. Humeralcallus, die Notopleuralnaht, der Postalarcallus und der grösste Theil der Pleuren bräunlichgelb; nur der mittlere Theil der Mesopleura in grosser Ausdehnung und die Sternopleura sind glänzend bläulichschwarz. Beine hell bräunlichgelb bis orangegelb, nur die Basis der Hinterschienen (ca. $\frac{1}{3}$) und alle Tarsen, mit Ausnahme der Basis des Metatarsus, dunkelbraun. Bei einem Exemplar sind die Spitzen der Schenkel, die Basis der Mittelschienen und die Hinterschienen am Ende auch gebräunt. Die Behaarung zeigt keine Eigenthümlichkeiten. Hinterleib sehr schmal, ca. doppelt so lang als der Thorax. Tergite dunkel purpurviolett, Basaldrittel des ersten, die Seitenränder sämmtlicher Tergite gelb; am ersten und zweiten Tergit ist die Behaarung ziemlich gleichmässig, am 3—5 ist sie am distalen Theil dichter. Die Sternite sind bläulich, wenig glänzend; Basis des ersten, die Hinterränder sämmtlicher sowie der Seitenrand hell orangegelb. Die Genitalien bilden ein kugelförmiges Gebilde von gelber Farbe, mit zwei kurzen etwas dunkleren Lamellen. Flügel hyalin, die Spitzenhälfte schwach gebräunt; Adern dunkelbraun, Stigma heller. Schwinger gelb, der Knopf heller.

Länge: 8 mm.; Flügellänge: 7·6 mm.

♀. In den Hauptmerkmalen mit dem Männchen übereinstimmend. Stirn ca. den $\frac{1}{5}$ Theil der Kopfbreite einnehmend (8 : 42), fast parallelrandig, nur am unteren Theil etwas divergirend; der obere Theil und der Scheitel schwarz, glänzend, schwärzlich behaart, mit einer schmalen Mittelfurche, deren Ränder am Scheitel divergiren und an den Seiten des Ocellendreieckes verlaufen; der untere Theil und das Untergesicht weissgelb, ziemlich glänzend, hellgelb behaart. An der Grenze, wo die schwarze und weissgelbe Farbe sich treffen, ist ein Quereindruck vorhanden. Fühler entschieden

* Die Gattungen der Sarginen-Gruppe müssen einer Revision unterzogen werden um die richtige Nomenclatur feststellen zu können. Bis ich diese Revision vornehme, will ich keine Änderungen machen.

grösser als beim Männchen, braun. Thorax dem des Männchens ähnlich gefärbt, an den Pleuren ist aber die schwarzblaue Farbe mehr ausgedehnt nur auch am vorderen Theil der Pteropleura ist ein ähnlich gefärbter Fleck sichtbar. Hinterleib von verschiedener Breite, metallisch bläulichgrün oder purpurviolett, sonst wie beim Männchen. Genitalien bräunlichgelb, die kleinen Lamellen schwarz. Beine wie die des Männchens gefärbt, auch was die Variation anbelangt.

Länge: 8·5—10 mm.; Flügellänge: 8—9·5 mm.

Fundorte. Seychelles: Marie Anne Island (3. XII. 1908); Silhouette, Plateau des Mare aux Cochons, *circa* 1100 Fuss, IX. 1908; Mahé, Cascade Estate, *circa* 1000 Fuss, 1908 and 1909.

CEPHALOCHRYSA, nov. gen.

Die Gattung steht *Microchrysa* Lw. am nächsten, von der sie sich durch die Grösse der hieher gehörenden Arten, durch die gleiche Färbung beider Geschlechter, durch das dunkle Geäder (besonders der Discoidaladern und des Vorderastes der Posticalis) sowie durch die über den Fühlern liegende, die ganze Breite der Stirn einnehmende, mehrweniger erhabene weisse Querbinde unterscheidet. Charakteristisch sind: der sehr breite Kopf und der verhältnismässig kurze Hinterleib. Der Habitus erinnert an *Chloromyia formosa* Scop.

Eine vollständige Beschreibung der Gattung und der Arten werde ich erst dann geben können, wenn ich die Gruppe der Sarginen eingehend studirt habe.

Als typische Art betrachte ich

8. *Cephalochrysa hovas** (Big.), ♂♀, Ann. Soc. ent. France, Sér. 3. vii. 133, 1859, und Sér. 5. ix. 187, 1879.

Bigot hat die Art als *Sargus* (*Chrysonotus*) von Madagaskar beschrieben. Es liegen mir Exemplare von Silhouette (Hochwald, VIII. 1908), und Mahé (Cascade Estate, X. 1908—I. 1909) vor.

Länge: 7—9·5 mm.; Flügellänge: 5·5—7·5 mm.

In diese Gattung ist auch *Chloromyia stigmatica* v.d. Wulp. aus Neu-Guinea einzureihen.

MICROCHRYSA, Loew, Verh. zool.-bot. Ver. Wien, v. 146, 1855.

9. *Microchrysa flaviventris* (Wied.), ♂♀.

Sargus flaviventris, Wied., Aussereurop. Zweifl. Ins. ii. 40, 1830.

Fundorte. Seychelles: Mahé, Cascade Estate, *circa* 800 Fuss, I.—III. 1909, und Port Victoria, II. 1909. S. Asia, Manila, Arch. Ind., Neu-Guinea.

* More than once I noticed *Cephalochrysa hovas* settling on damp decaying felled trees in the mountain-forests. On one occasion a specimen was observed settling on the decaying head of a felled *Verschaffeltia*-palm (Silhouette, 1500 feet, VIII. 1908), in the rotting central part of which were a number of Stratiomyiid larvæ. These may well have been the larvæ of this species; some were preserved in spirit and may be investigated later.—HUGH SCOTT.

No. VII.—DIPTERA, BORBORIDÆ FROM SEYCHELLES.

By James E. Collin, F.E.S.

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 15th June, 1911.

Limosina Macquart, Suit. à Buff. ii. 571, 1835.

1. *Limosina acrostichalis* Becker, Mitth. zool. Mus. Berlin, ii. 126, 1903.

Belongs to the group of species with more than four strong marginal scutellar bristles, with incurved bristles on the thorax, and with a long bristle on the middle trochanter*. It has six strong marginal bristles, also a number of small discal bristles on the scutellum, and one humeral and another bristle on the front of the thorax in a line with the dorso-central row, incurved. Becker does not mention these incurved bristles in describing the species.

Three males and five females.

Locality. Mahé: Cascade Estate, about 800 feet and over, X. 1908—I. 1909; near Morne Blanc, X.—XI. 1908.

Also recorded from Egypt and the Canary Isles (Becker), and I have seen specimens from Madagascar.

2. *Limosina ferruginata* Stenhammer, Kongl. Vet. Akad. Handl. lxxiv. 397, 1853 but published in 1855.

Undoubtedly the same as the European species and probably the same as the *Borborus illotus* of Williston from the Island of St Vincent (West Indies).

Two males and two females.

Locality. Mahé: Cascade Estate, about 800—1500 feet, 1909.

Also recorded from the Canary Isles (Becker).

3. *Limosina hirtula* Rondani, Boll. Soc. Ent. Ital. xii. 40, 1880.

Belongs to the group of species with the disc of the scutellum uniformly bristly, containing *ferruginata* Stenh., *acutangula* Zett., *albipennis* Rond., *litoralis* Stenh., *vagans* Hal., *hirtula* Rond., *lugubris* Hal., and *thalhammeri* Strobl; *ferruginata* is of a reddish-brown colour, *acutangula* quite distinct in the venation of the male, the next three have the second costal segment longer than the third, and the last three the second costal segment equal to or shorter than the third; *thalhammeri* I believe to be a synonym

* Attention was first called to this group in Ent. Month. Mag. 1902, p. 59 under the description of *Limosina halidayi*.

of *lugubris* Hal., a species not uncommon in England, the Seychelles species, however, is certainly distinct from *lugubris* and may be *hirtula* which has been recognised by Becker from North African specimens. Compared with *lugubris* it has paler legs, clearer wings, antennæ more uniformly brownish-yellow (in *lugubris* ♂ the third joint is brown above and yellowish beneath), the cubital vein is slightly but distinctly upcurved (in *lugubris* it is practically straight), the hypopygium is smaller, less bristly, and the bristles at the hind corners of the abdominal segments longer, those on the last segment reaching beyond the end of the hypopygium, and the hindmargins of the ventral plates in the male do not bear the conspicuous short bristles present in *lugubris*.

Seventeen males and thirty-eight females.

Locality. Mahé: Cascade Estate, about 800—1500 feet, X. 1908—I. 1909.

4. *Limosina curvinervis* Stenhammer, Kongl. Vet. Akad. Handl. lxxiv. 406, 1853 but published in 1855.

Synonym: *Limosina roralis* Rondani, Boll. Soc. Ent. Ital. xii. 37, 1880.

This species is closely allied to *L. fontinalis* Fallén, but is smaller and the acrostichal bristles on the thorax are all equally small. Stenhammer does not mention the number of scutellar bristles, but an immature specimen in the Swedish General Collection at Stockholm labelled "Oel" and "Hgn" (and therefore probably Stenhammer's type) has eight bristles as in *fontinalis* and is identical with the species recorded as British under the name *L. roralis* Rondani, and with specimens in Bigot's Collection under that name which bear a blue label "Type" and were probably sent to Bigot by Rondani. The Seychelles specimens entirely agree with British specimens, with the possible exception that in the latter the second costal segment may be slightly longer in proportion to the third.

One male and seven females.

Locality. Silhouette: Mare aux Cochons and forest immediately above, 1400—2000 feet, IX. 1908. Mahé: Cascade Estate, about 800 feet and over, X. 1908—I. 1909; near Morne Blanc, X.—XI. 1908; marshy ground near sea-level, Cascade, 20. II. 1909; Anonyme Island from grass, ferns, trees, etc., I. 1909.

5. *Limosina punctipennis* (Wiedemann), Auss. Zweifl. Ins. ii. 599, 1830.

Synonyms: *Limosina angulata* Thomson, Eugena Resa, 602, 1868.

Borborus venalicus Osten Sacken, Cat. Dipt. N. Amer., 2nd Ed. 263, 1878.

A very handsome and distinct species, four scutellar bristles only, two pairs of dorsocentral bristles on the thorax, sternopleural bristle small, front femora (♂) somewhat curved and dilated with soft pubescence beneath, front tibiæ and tarsi (♂) with an outstanding postero-ventral ciliation of soft fine hairs.

A large number of specimens, the majority females.

Locality. Silhouette: jungle, 1500 feet, from dung. Mahé: country above Port Glaud, about 500—1000 feet, 5. XI. 1908; Cascade Estate, about 800 feet and over, X. 1908—I. 1909; near Morne Blanc, XI.—XII. 1908; Mare aux Cochons district, about 1500 feet, 26. I.—2. II. 1909; Anonyme Island on seaweed, I. 1909.

Also recorded from East Indies (Wied.), Africa (Lw.), Cuba (O.-Sack.), Brazil and St Vincent (Thoms. and Willist.).

6. *Limosina munda*, n. sp.

A brightly shining black species with ample brownish wings and pale yellow legs.

♂♀. *Head* broader than long with moderately large eyes, frons and face brilliantly shining, the former broader than long and with very few bristles, viz. one pair of ocellar, two pairs of vertical and two pairs fronto-orbital, the front one being weak. Face nearly straight in profile, the large and wide inter-antennal keel being softly rounded off in all directions, jowls about one-third the heighth of eye. Antennæ placed wide apart and strongly divaricate, basal joint minute, second long, being quite as long as the third joint which bears soft pubescence, arista minutely pubescent about twice as long as the antenna.

Thorax shining black, rounded, with only two pairs of dorso-central bristles, the other bristles on the disc being very small, scattered and few in number; in some lights there are indications of a sparse yellowish tomentum. Pleuræ and scutellum shining black, the latter rounded, semicircular and with four marginal bristles only.

Abdomen long ovate, shining black but somewhat rugose, bearing a few scattered hairs but no bristles; the first segment is very short, the second and third long, forming the major portion of the abdomen, the fourth about half the length of the third and the fifth shorter still; hypopygium globular and subterminal.

Legs pale yellow, the front tibiæ and tarsi and the extreme knees of the posterior legs slightly brownish; second joint of hind tarsi one and a half times the length of the first and slightly dilated; bristles on middle tibiæ very few and small, one or two above before the middle and two or three apical, none beneath.

Wings longer than the abdomen, uniformly tinged with brownish-yellow; costal ciliation at base of wing very minute; cubital vein nearly straight, ending practically at wing tip; second costal segment but very little longer than the third; discal and postical veins both continued beyond the postical cross-vein, the former somewhat indistinctly nearly to the wing margin, the latter distinctly for about the length of the cross-vein. Halteres whitish-yellow.

Length about 1·5 mm.

Two males, two females.

Locality. Mahé: near Morne Blanc, X. 1908; and the high forest of Morne Blanc and Pilot, X.—XI. 1908.

Var. *bracata*, n. var.

Exactly like the type except for the darkened apical three-quarters of the middle, and apical two-thirds of the hind, femora.

Three females.

Locality. Mahé: high forest of Morne Blanc and Pilot, X.—XI. 1908; and Cascade Estate, about 800—1500 feet.

7. *Limosina clunipes* (Meigen), Syst. Beschr. Dipt. vi. 208, 1830.

The specimens appear to agree in all particulars with the European species.

Two males, two females.

Locality. Mahé: Cascade Estate, III. 1909.

8. *Limosina brachystoma* Stenhammer, Kongl. Vet. Akad. Handl. lxxiv. 393, 1853 but published in 1855.

I cannot separate the specimens from those occurring on seaweed on the south coast of England.

Numerous specimens of both sexes.

Locality. Mahé: from seaweed at Anonyme Island, i. 1909.

9. *Limosina* sp.?

A single male specimen gummed to card, closely allied to the European *L. heteroneura* Hal. in having a pale face and the cross-veins approximated, but differing in its more shining thorax and more up curved cubital vein.

Locality. Mahé: Anonyme Island, 9. I. 1909.

No. VIII.—DIPTERA, PHORIDÆ FROM SEYCHELLES.

By James E. Collin, F.E.S.

(Plate 5.)

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 15th June, 1911.

Chonocephalus Wandolleck, Zool. Jahrb. Syst. xi. 428, 1898.

1. *Chonocephalus similis* Brues, Ann. Mus. Nat. Hung. iii. 554, 1905.

♂. Brues described this species from a single male collected at Matheran, Bombay, India, and there is little to add to his description except that I believe the mesopleura bears a few hairs, the hypopygium also bears a number of longish hairs each side curving downwards and inwards. The middle tibiæ often appear to be flattened and of a whitish colour (possibly only the result of immaturity).

♀. Very similar to Brues' figure of *C. kiboshoënsis*, the whole insect being of a chestnut brown colour, darker about the hind margins of the abdominal segments and paler about the centre of frons; the legs yellowish. The pubescence of the arista is much longer than in Brues' figure and the eyes slightly larger; the bristles on the abdomen are not limited to the hind margins of the segments. The pubescence on the frons is rather longer round the antennal foveæ, one especially long hair being placed above the antennal fovea in front of the eye, and another one below this fovea almost in front of the eye but slightly lower. The palpi bear a long hair at the tip.

Chonocephalus mexicanus Silvestri (Boll. Lab. Zool. della Scuola d'Agric. Portici v. 172, 1911) agrees in the chætotaxy of the head and in general coloration with the above females and may represent the same species.

Locality. Silhouette: from near Morne Pot-à-eau, about 1500 feet, on rotting fruit, VIII. 1908 (eleven females). Mahé: Cascade Estate, about 800 feet and over (fourteen males, one female).

Also known from India (Matheran, near Bombay).

2. *Chonocephalus* sp. ? ♂.

A headless male specimen from Mahé, Cascade Estate, about 800—1500 feet, 1909, must belong to a different species; the mesopleuræ are bare, the basal pair of scutellar bristles are reduced to fine hairs, the wings are longer, the subcostal vein does not fade away but ends in the costa, and all the thin veins are very distinct, the first thin vein being distinct right back to its origin at the end of the cubital, the second thin vein is not so straight and ends at a point less than a third the distance from the end of the first to

the end of the third thin veins, the hypopygium is different, bears a long dark anal process and is without the long curved hairs; the hind tarsi are not so stout.

Can this be the male of *C. kiboshoënsis* Brues described from a single female collected at Kibosho, German East Africa?

Dohrniphora Dahl, SB. Ges. naturf. Berlin 1898, No. 10, p. 188.

3. *Dohrniphora cleghorni* (Bigot), Indian Museum Notes, i. No. 4, p. 191, 1890. (Plate **5**, fig. 1.)

♂. Agreeing with Bigot's description of the female to which may be added that the frons is dark brownish-black slightly shining, arista microscopically pubescent, palpi bearing 4—5 bristles at the tip only.

Thorax reddish-brown to brownish-black, scutellum very wide and short with one strong bristle and one minute hair each side near the base, prothorax with one strong bristle pointing up to the humerus, mesopleura running into the humerus without any appreciable suture except for the prothoracic stigma and bearing the same pubescence along its upper half as is borne by the humerus.

Abdomen with the first two segments reddish-yellow, the hind margins dull blackish, wider on the second than on the first segment, and almost interrupted at the middle; the third to fifth segments are dull black with a triangular reddish-yellow mark on the base of each segment, the apex of the triangle almost reaching the hind margin; sixth segment somewhat longer, broadly yellowish on the base and dull black on the hind margin; the hypopygium is hidden when viewed from above but projects considerably below; the long yellow anal organ arises from out of a short yellow cup-like process just beneath the hind margin of the sixth segment.

Legs with the hind femora bearing beneath at the extreme base on the side nearest the abdomen a little clump of about 3—5 short stout black bristles; hind tibiæ bare except at the extreme tip, where there is on the upper side one short bristle and beneath one long and 2—3 short spurs.

Wings with the costa reaching quite to middle of wing, ciliation extremely short and fine, only an indication of a mediastinal vein, subcostal ending close to the cubital which is forked, the fork being very acute (fig. 1).

♀. The three female specimens in Bigot's Collection are in bad condition, being immature, gummed to slips of talc, and have every appearance of having been originally preserved in spirit; they each bear a label, "Phora Cotesi ex larva Tachinidarum parasit. Seric. mori — n. sp. Calcutta J. B.", and there can be little doubt are the type specimens, Bigot having on other occasions omitted to re-label his type specimens with the name he ultimately gave the species when describing it. These specimens agree so accurately with the Seychelles males in the exceedingly short costal ciliation, in the relative positions of the ends of subcostal and cubital veins, in the absence of any bristle or ciliation to the hind tibiæ above (only differing in the sexual characters of an elongate proboscis, simple hind femora, and differently shaped and coloured abdomen), that I do not hesitate in considering them sexes of the same species.

Locality. Mahé : Cascade Estate, about 800 feet and over, X. 1908—I. 1909 ; coast marsh at Port Glaud, 5. XI. 1908. Two males.

Also known from India (Calcutta).

I should have considered this species a synonym of *D. dohrni* Dahl if Becker had not stated that the hind tibiæ in that species were ciliated with fine bristles as in his Group II (*Aphiochæta* Brues). *Phora chlorogastra* Becker, according to the description, appears to agree in a remarkable manner with the Seychelles males and is possibly a synonym ; it has been considered (Kertesz Katalog. Dipt., vol. vii. 1910) only a variety of *D. divaricata* Aldrich, which, however, with its var. *perplexa* Brues was described as having the "abdomen black or brown, the posterior margin of each segment with a narrow band of light yellow, which continues more or less as a stripe down the middle of the dorsal surface," and one would gather from the description that the costal ciliation was longer. There are no other species with bare hind tibiæ in the genus *Dohrniphora*.

4. *Dohrniphora* sp. ? ♀ (Plate **5**, fig. 2).

A single female from Mahé : forest above Mare aux Cochons, 2. IX. 1908, though having a long proboscis differs from *cleghorni* in the slightly longer ciliation to the costa (fig. 2), the somewhat shorter subcostal vein and in the presence of a distinct bristle on the hind tibiæ just outside the seam about one-third from the base. The abdomen is entirely brownish-black, the hind margins very narrowly whitish.

The only other described species of *Dohrniphora* with a single bristle at the basal third of hind tibiæ is *D. papuana* Brues from New Guinea, but this has the female proboscis of normal length.

APHIOCHÆTA Brues, Trans. Amer. Ent. Soc. xxix. 337, 1903.

Table of Species.

1 (4) Cubital vein simple (fig. 3).

2 (3) Frontal bristles normal, mesopleura bristly, first three joints of front tarsi in the female very wide and flattened, and ovipositor chitinous and terminating style-like. *aculeipes*, n. sp. ♂♀.

3 (2) The inner bristles of lower frontal row placed in front of the outer bristles and near the eye margin, mesopleura bare, front tarsi of the female and ovipositor normal. *mera*, n. sp. ♀.

4 (1) Cubital vein forked.

5 (30) Costal ciliation short (figs. 3—11).

6 (13) Scutellum with four distinct bristles.

7 (8) Costal ciliation extremely short (fig. 4), hind tibiæ bare, halteres brownish or black. *limbata* Brues, ♂♀.

8 (7) Costal ciliation not extremely short.

9 (10) Costa extending well beyond middle of wing (fig. 5), larger species, halteres yellow. *egena*, n. sp. ♀.

10 (9) Costa barely reaching middle of wing or distinctly short of the middle.

11 (12) Costa barely reaching middle of wing (fig. 6), halteres brownish.
viduata, n. sp. ♀.

12 (11) Costa ending distinctly short of middle of wing (fig. 7), halteres yellow.
innocens, n. sp. ♀.

13 (6) Scutellum with only two distinct bristles.

14 (29) Subcostal and cubital veins of normal stoutness.

15 (28) Halteres brown or black.

16 (19) Costa extending far beyond the middle of wing (fig. 8).

17 (18) Mesopleura bristly, inner bristles of lower frontal row placed in front of the outer bristles and near the eye margin. *extans*, n. sp. ♂♀.

18 (17) Mesopleura bare, lower frontal row of bristles normal. *consueta*, n. sp. ♂♀.

19 (16) Costa not reaching middle of wing or only slightly exceeding it.

20 (27) Mesopleura bare.

21 (22) Arista short (not longer than the frons), only one pair of supra-antennal bristles, yellowish species. *brevis*, n. sp. ♀.

22 (21) Arista of normal length (longer than frons).

23 (24) Posterior tarsi of male with the last joint dilated, fork of cubital vein large, the upper branch being more upright than usual (fig. 9). *planipes*, n. sp. ♂♀.

24 (23) Last joint of posterior tarsi normal, fork of the cubital vein smaller and more acute (fig. 10).

25 (26) Frons dull, inner bristles of lower frontal row placed in front of outer bristles and near the eye margin. *spreta*, n. sp. ♂♀.

26 (25) Frons shining, frontal bristles normal. *frontata*, n. sp. ♂.

27 (20) Mesopleura bristly, costa ending distinctly short of middle of wing.
invenusta, n. sp. ♂.

28 (15) Halteres yellow, mesopleura bare, costa ending distinctly short of middle of wing. *media*, n. sp. ♂.

29 (14) Subcostal and cubital veins greatly thickened, fork indistinct (fig. 11), halteres black. *latinervis*, n. sp. ♂.

30 (5) Costal ciliation long (fig. 12), mesopleura bristly, halteres yellow.
soluta, n. sp ♂♀.

5. *Aphiochæta aculeipes*, n. sp. (Plate **5**, fig. 3).

Yellowish species, cubital vein simple, mesopleura bristly, tarsi pointed and the first three joints of the front tarsi in the female widely dilated and flattened.

♂. Head yellow, ocellar triangle slightly darkened; frons wider than long, bristles normal, upper pair of supra-antennal bristles stronger and wider apart than lower pair; antennæ yellow, somewhat large, arista more than twice the length of the frons; palpi yellow.

Thorax yellow, with a tendency towards a brownish-yellow central stripe and similarly coloured patches between this stripe, the humerus and the root of the wing; scutellum distinctly brownish with a pair of strong bristles and another pair of minute bristles nearer the base; one pair of small dorso-central bristles; pleuræ with brownish-yellow patches below the dorso-pleural suture, especially beneath the root of the wing and beneath the post-alar callus; mesopleura with a few bristles on the upper hind corner; metanotum yellow.

Abdomen brownish-yellow with dull dark brown sides to the segments and narrow pale yellow hind margins, sixth segment entirely dull dark brown except for the narrow hind margin; indications exist of a brownish central stripe down the abdomen. Hypopygium small and inconspicuous, but anal process large, pale yellow, nearly as long as the sixth abdominal segment.

Legs whitish yellow, especially the anterior pairs; hind femora darkened at the tip and without any long hairs at the base beneath; tarsi pointed, *i.e.* last joint no wider than penultimate joint and ungues very minute, middle tibiæ with one long spur, hind tibiæ one short spur; cilia on hind tibiæ very weak.

Wings (fig. 3) with the costa not reaching to middle of wing and with short ciliation, second thick (cubital) vein simple (not forked). Halteres pale yellow.

♀. Like the male, but the first three joints of the front tarsi are remarkably flattened and widened (*Platychirus*-like) on the outer or posterior side; the first joint is distinctly wider than the tibia and a little more than twice as long as wide, the second joint is wider still and but little longer than wide, the third is about the same width as the second but hardly so long, the fourth joint is but little stouter than normal, while the last joint, like the last joint of all the tarsi, is exceedingly pointed, the ungues and pulvilli being microscopic.

The sixth abdominal segment bears some long bristles round the hind margin, the telescopic ovipositor is more heavily chitinized than usual in *Phora* and when fully exposed is about twice as long as the sixth abdominal segment and gradually tapering in width, towards the tip there appears to be a joint (about which a few short hairs are visible) and beyond this joint it terminates in a short curved flattened style.

Length about 1·25 mm.

This species would probably be considered by Brues as belonging to his genus *Plastophora*, but I do not consider the horny ovipositor, by itself, a generic character, while in *aculeipes* the proboscis is not enlarged and horny as in the type of Brues genus. *A. formicarum* Verr., which has been placed by Brues in the genus *Plastophora*, differs from *aculeipes* among other characters in the arrangement of the frontal bristles (*v.* Ent. Month. Mag., London, 1908, p. 168).

Locality. Mahé: Cascade Estate, about 800 feet and over, X. 1908—I. 1909. Twenty-three males, six females.

6. *Aphiochæta mera*, n. sp.

♀. Frons greyish-black, longer than wide, outer bristles of lower frontal row placed above the inner and equidistant from the eye margin, upper pair of supra-antennal bristles placed wider apart than the smaller lower pair; antennæ small, yellow, but brownish above, arista short, not longer than the frons, face yellow, palpi pale yellow.

Thorax reddish-yellow, scutellum with only two strong bristles, pleuræ yellow, mesopleura bare.

Abdomen reddish-yellow on disc of second segment, reddish-brown on third segment and gradually getting darker till it is brownish-black at the tip. The telescopic ovipositor normal, ending in the usual papillæ.

Legs yellow, with the hind knees and the seam of hind tibiæ darkened, hind femora with a few long hairs beneath at base, cilia on hind tibiæ distinct, tarsi simple and not acutely pointed.

Wings resembling those of *aculeipes*, the cubital vein simple. Halteres not visible in the specimen examined but probably pale.

Length just exceeding 1 mm.

Locality. Seychelles: exact locality unknown.

7. *Aphiochæta limbata* Brues, Ann. Mus. Nat. Hung. iii. 546, 1905. (Plate **5**, fig. 4.)

Similar to *A. viduata*, but differing in its venation and the absence of cilia to the hind tibiæ.

♂. Head black, frons about as long as wide, dull; upper pair of supra-antennal bristles strong and wider apart than the small lower pair; antennæ fairly large, brownish-yellow, arista long and distinctly pubescent; palpi dirty yellow.

Thorax varying from black with a reddish tinge to reddish-brown, scutellum with four bristles, the basal pair weaker than the apical; pleuræ paler than the thorax, mesopleura bare.

Abdomen deep dull black, sometimes with a slight reddish tinge, hypopygium greyish, very small, inconspicuous, anal process very small, yellow.

Legs pale, hind legs darkened about the tip of the femora, middle coxæ with a dark streak behind, hind tibiæ bare, no cilia visible though the usual black seam is present.

Wings (fig. 4) slightly darkened, venation as in figure, halteres brownish to black.

♀. Like the male, indeed the two sexes are difficult to distinguish unless the female ovipositor is exserted.

Length about 1 mm. ♂, to 1·5 mm. ♀.

I feel sure that I have correctly recognised Brues' species and now for the first time describe the male which was unknown to Brues.

Locality. Silhouette: Forest above Mare aux Cochons, 2. IX. 1908. Mahé: Cascade Estate, about 800 feet and over; from near Morne Blanc, X.—XI. 1908; forest of rather stunted "Capucin" trees (*Northea*), summit of "Montagne Anse Major," about 2000 feet, 1. II. 1909; Mare aux Cochons district, about 1500 feet, 26. I.—2. II. 1909. Seventeen males and forty-three females.

Also known from Matheran, East India (Brues).

8. *Aphiochæta egena*, n. sp. (Plate **5**, fig. 5).

♀. Blackish-brown species with a tendency to red on the thorax and pleuræ; frons somewhat dull, slightly longer than broad, with a tendency to red, bristles normal, under

pair of supra-antennal bristles much smaller and rather closer together than the upper pair, antennæ very small, arista long and distinctly pubescent, palpi dirty yellow.

Thorax with one pair of dorso-central bristles, scutellum paler than the thorax with four distinct strong bristles, mesopleura bare.

Abdomen dull blackish-brown, hind margins of segments often paler, terminal lamellæ yellow, second segment at basal corners with 2—3 strong bristles somewhat as in *rufi-cornis* Mg., sixth segment with several long hind-marginal bristles.

Legs brownish-yellow, front legs paler, ciliation beneath hind femora at base consisting of about 6—7 not very long curved hairs, cilia of hind tibiæ distinct, longest about the middle of tibia.

Wings (fig. 5) with a brownish tinge, costa with a short fringe and reaching beyond wing middle, subcostal vein ending about midway between humeral cross vein and end of costa, fork small and acute, thin veins dark and distinct. Halteres yellow with brown stems.

Length about 1·75 mm.

Locality. Silhouette: low coconut-planted country near the coast, Pointe Etienne, 17. IX. 1908. Mahé: high damp forest between Trois Frères and Morne Seychellois, about 1500—2000 feet, 9. and 10. XII. 1908; high forest of Morne Blanc and Pilot, X.—XI. 1908; Morne Seychellois, over 1500 feet, 4. II. 1909; Mare aux Cochons district, about 1500 feet, 26. I.—2. II. 1909; Cascade Estate. Eight females.

Note. ♂. What might be the male of this species is represented by a single specimen from Mahé, high forest of Morne Blanc and Pilot (No. 111); it resembles the female in general coloration, venation, arrangement of frontal bristles and cilia to hind legs, but there are only two distinct scutellar bristles, the basal pair being very minute, and the halteres are darker. The hypopygium is small and greyish in contrast with the dull black abdomen and bears a single long bristle each side, the long anal organ is pale yellow.

9. *Aphiochæta viduata*, n. sp. (Plate **5**, fig. 6).

Reddish-black species, scutellum with four bristles, mesopleura bare.

♀. Head black; frons about as broad as long, dull; upper pair of supra-antennal bristles strong, under pair minute; antennæ small, reddish-brown, arista distinctly pubescent; palpi and proboscis yellow.

Thorax black but with a distinct tendency at times to a reddish tinge; scutellum with four bristles, the basal pair weaker than the apical pair; pleuræ distinctly reddish, palest towards the coxæ; mesopleura bare.

Abdomen dull black sometimes with a reddish tinge.

Legs yellow, middle coxæ with a dark streak behind, hind legs darkened about the tips of femora and tibiæ, cilia on hind tibiæ distinct but not strong.

Wings (fig. 6) very faintly brownish. Halteres dirty yellow.

Length 1—1·25 mm.

The male of this species does not appear to be represented in the collection, though the possibility of its having only two scutellar bristles has not been overlooked.

Locality. Mahé: Cascade Estate, about 800 feet and over, collected by H. P. Thomasset and Hugh Scott, X. 1908—I. 1909; Mare aux Cochons district, about 1500 feet, 26. I.—2. II. 1909; Cascade Estate, about 800—1000 feet, 1909. Twenty-five females.

10. *Aphiochæta innocens*, n. sp. (Plate **5**, fig. 7).

♀. Frons greyish-black, dull and longer than broad, frontal bristles normal, upper pair of supra-antennal bristles wider apart than the smaller lower pair, antennæ small, reddish-brown, palpi yellow.

Thorax black with a tendency to red, scutellum with four bristles though the basal pair are weaker, mesopleura bare.

Abdomen black, slightly shining.

Legs yellow, hind pair slightly brownish, cilia to hind tibiæ quite strong for so small a species.

Wings (fig. 7) with costa less than half the length of wing and with short ciliation, subcostal vein long, ending near the fork. Halteres yellow.

Length about 1 mm.

Locality. Silhouette: Mare aux Cochons and forest immediately above, IX. 1908; Mahé: from near Morne Blanc, X.—XI. 1908; Mare aux Cochons district, about 1500 feet, 26. I.—2. II. 1909; Anonyme Island, from grass, ferns, trees, etc., I. 1909. Five females.

11. *Aphiochæta extans*, n. sp. (Plate **5**, fig. 8).

♂. Head black, frons narrow, being longer than wide, dull and inclined to be reddish-brown, the two bristles of the lower frontal row on each side of the frons are placed one above the other almost equidistant from the eye margin, upper pair of supra-antennal bristles larger and wider apart than lower pair, antennæ small, reddish-brown, palpi and proboscis yellow.

Thorax reddish-brown, paler about the post-alar calli, scutellum reddish-brown with only one pair of bristles, pleuræ yellow, mesopleura with one very long stout bristle and numerous minute ones, metanotum reddish-brown.

Abdomen with the first two segments reddish-yellow, with reddish-brown hind margins, narrow on the first segment but widening into a triangular central stripe on the second segment: this segment bears 3—4 bristles at each hind corner as in *ruficornis* Mg., third to the fifth segments dull blackish-brown with reddish hind margins spreading upwards on to the disc about the middle, sixth segment dull black with a reddish hind margin bearing 3—4 longish bristles, hypopygium dark coloured, almost entirely hidden beneath the sixth segment, anal organ long and pale.

Legs yellowish but hind femora darkened above and at the tip, the hind tibiæ darkened along the seam and at the tip, hind femora with a few long curved hairs beneath at the base, hind tibiæ with a cilia of about 8 strong bristles, middle tibiæ with a cilia each side of the seam.

Wings distinctly brownish, costa beyond the middle of wing and with a short ciliation (fig. 8). Halteres black with pale stems.

♀. Like the male but the first five abdominal segments are reddish-yellow, the first with a dark hind margin and like the third and fifth darkened about the sides, the second and fifth with a darkened central stripe, the fourth segment is somewhat abbreviated at the sides.

Length, about 1·5 mm. ♂, 1·8 mm. ♀.

Locality. Mahé: high forest of Morne Blanc and Pilot, X.—XI. 1908; forest of rather stunted "Capucin" trees (*Northea*), summit of "Montagne Anse Major," about 2000 feet, 1. II. 1909; Cascade Estate, about 800—1000 feet, II. 1909. One male, two females.

12. *Aphioehæta consueta*, n. sp.

♂. Closely resembling *A. extans* but the frons is yellowish and the lower row of frontal bristles is normal, the inner pair being placed near the upper supra-antennal bristles, the lower pair of supra-antennal bristles are minute, being much smaller than in *extans*.

Thorax and especially the scutellum somewhat paler than in *extans* and the mesopleura bare.

Abdominal markings differing from those of *extans*, the blackish-brown markings occupy the hind corners of the second and the sides of the third and fourth segments, spreading indistinctly along the hind margins of each of these segments, the fifth and sixth segments gradually darken from yellowish to yellowish-brown, the hypopygium which is not hidden beneath the sixth segment is blackish-brown.

Legs somewhat paler than in *extans*, only the hind femora at the tip being darkened, the cilia on the hind tibiæ shorter and more numerous, the middle tibiæ possess cilia on each side of the seam.

Wings much like those of *extans* but the subcostal vein is a little shorter. Halteres brownish with paler stems.

♀. Like the male but the abdomen more extensively darkened, though the colour of the abdomen may have been affected in the three specimens by their being gummed to card. The fourth abdominal segment is not abbreviated as in *extans* ♀.

Length about 1·75 mm. ♂, 2 mm. ♀.

Locality. Silhouette: Mare aux Cochons and forest near by, and just above, IX. 1908. Mahé: Mare aux Cochons district, about 1500 feet, 26. I.—2. II. 1909; marshes on coastal plain at Anse aux Pins and Anse Royale, 19—21. I. 1909. Three males, three females.

Note. The male specimen mentioned in the note at the end of description of *P. egena* would be located here by the Synoptic Table, but may be distinguished by its much darker colour, entirely black abdomen, brownish wings, etc.

13. *Aphiochæta brevis*, n. sp.

♀. Frons about as long as wide, yellowish but greyish about the upper part, frontal bristles normal but only one pair of supra-antennal bristles, antennæ moderately large, yellow, somewhat obscured above, arista short, not exceeding the length of frons, palpi pale yellow.

Thorax yellow, scutellum with two strong bristles and two small hairs, pleuræ pale yellow, mesopleura bare.

Abdomen reddish-brown, paler about the second segment.

Legs pale yellow, first joint of front tarsi equal in length to the next three joints together, cilia to hind tibiæ not very distinct, consisting of six to eight bristles.

Wings with costa hardly reaching middle of wing, subcostal ending nearer to the end of costa than to the humeral cross-vein, costal ciliation sparse, not very long (about same length as in *latinervis*, fig. 11), fork fairly large, first thin vein evenly curved. Halteres pale brownish.

Length about 1 mm.

Locality. Mahé: Cascade Estate, about 800—1500 feet. One female.

14. *Aphiochæta planipes*, n. sp. (Plate **5**, fig. 9).

In general appearance much resembling *extans* and *consueta*, but distinguished by the venation and the dilated last joint of the posterior tarsi in the male.

♂. Frons brownish-yellow to black, frontal bristles normal, under pair of supra-antennal bristles very small, antennæ and palpi yellow.

Thorax brownish-yellow, pleuræ yellow, mesopleura bare, only two scutellar bristles.

Abdominal markings as in *consueta* but variable, the dark markings to the fourth segment may be more restricted or even almost absent, but the hind margins of the fourth, fifth and sixth segments are more or less darkened, hypopygium not hidden and with large yellow anal organ.

Legs pale yellow, including the hind knees, posterior tarsi brownish towards the tip and the last joint of all four tarsi dilated, that of the middle tarsi about twice as long as the preceding joint and nearly twice as wide, that of the hind tarsi about as long as the preceding joint and nearly twice the width, ungues and pulvilli minute. Cilia to hind tibiæ moderate, to middle tibiæ only present behind the seam.

Wings (fig. 9) differing from those of *extans* and *consueta* in the shorter costa with slightly longer ciliation, in the more open fork (the upper branch being more upright) and in the first thin vein, being more upcurved at the tip. Halteres with yellow stems and yellowish-brown knobs, at least towards the end.

♀. Costa somewhat longer in proportion to length of wing and abdomen brownish-yellow to blackish-brown, always paler about the base of each segment; posterior tarsi simple, the last joint only as wide as the preceding joint.

Length, ♂ about 1·75 mm., ♀ often not exceeding 1·5 mm.

Locality. Silhouette: Mare aux Cochons and forest above. Mahé: high forest of Morne Blanc and Pilot, X.—XI. 1908; Cascade Estate, about 800—1500 feet. Four males, four females.

Note. About eight specimens, all except one gummed to card, differ from *planipes* in having simple tarsi in the male, cubital fork smaller and more acute and thick veins nearer the costa. They must represent a distinct species, but as they do not present any striking character and are not in good condition I refrain from naming them.

Locality. Silhouette: near Pot-à-eau, VIII. 1908 (two females); Mare aux Cochons, IX. 1908 (one male); forest above Mare aux Cochons (four females). Mahé: country above Port Glaud, about 500—1000 feet, 5. XI. 1908 (one female).

15. *Aphiochæta spreta*, n. sp. (Plate **5**, fig. 10).

♂. Frons greyish-black, longer than broad, inner bristle of lower frontal row placed beneath the outer and almost as near the eye margin, upper pair of supra-antennal bristles much wider apart than the very little shorter lower pair, antennæ small, reddish-brown, palpi yellow.

Thorax blackish-brown, scutellum with only two bristles, pleuræ brownish-black, getting paler towards the coxæ, mesopleura bare.

Abdomen black with a greyish tinge in some lights, hypopygium small, greyish with a short but stout greyish-yellow anal organ.

Legs yellow, front tarsi slender, hind femora somewhat darkened above with 3—4 long hairs beneath at the base, cilia to hind tibiæ very distinct.

Wings (fig. 10) with short costal ciliation, subcostal vein ending nearer the end of costa than to humeral cross-vein. Halteres dusky, more darkened above.

♀. Very much like the male.

Length about 1·5 mm.

Locality. Mahé: from near Morne Blanc, X.—XI. 1908; Cascade Estate, about 800—1500 feet; scrubby forest vegetation, top of Mount Sebert, 1800 feet or more, I. 1909. Two males, one female.

16. *Aphiochæta frontata*, n. sp.

♂. Frons longer than broad, shining black, upper pair of supra-antennal bristles wider apart than the lower pair, antennæ very small and dark, palpi yellow.

Thorax black, pleuræ reddish-black, mesopleura bare, scutellum with only two bristles.

Abdomen black with a greyish tinge in some lights, hypopygium small, bare, with a short yellow anal organ.

Legs: front pair yellow with stout tarsi, middle legs with the femora darkened, hind legs dark except for the yellowish trochanters, hind tibiæ with very distinct ciliation, middle tibiæ with ciliation each side of seam.

Wings long and narrow, somewhat as in *spreta* but the costa extending beyond the middle of wing, subcostal vein ending about half-way between the humeral cross-vein and end of costa. Halteres black.

Length about 1·5 mm.

Locality. Mahé: Mare aux Cochons district, about 1500 feet. One male.

17. *Aphiochæta invenusta*, n. sp.

♂. Frons greyish-black, if anything broader than long, the inner bristles of lower

frontal row placed beneath the outer but not so near the eye margin, upper pair of supra-antennal bristles much wider apart than the but little smaller lower pair.

Thorax greyish-black, scutellum with only two distinct bristles, pleuræ brownish-black, mesopleura with one long stout bristle and a number of minute ones.

Abdomen dull black, hypopygium greyish with a long curved bristle on each side near the base and a long yellow anal organ.

Legs yellow, hind legs somewhat brownish, front tarsi long, cilia to hind tibiæ indistinct.

Wings quite clear, much as in *innocens* but costal ciliation shorter, thin veins very faint. Halteres blackish.

Length about 1 mm.

Locality. Mahé: Cascade Estate, about 800—1500 feet. One male.

Note. One male specimen, gummed to card, from the same locality, like *invenusta* has dark halteres and bristly mesopleura though I cannot trace the long stout bristle, but is not much more than half the size of that species, has a narrower frons, wings not so clear, thin veins more distinct, slightly longer costa, subcostal vein not ending quite so near the fork and is probably a distinct species.

18. *Aphiochæta media*, n. sp.

♂. Frons greyish-black, about as wide as long, bristles normal though the outer bristle of lower frontal row is placed somewhat above the inner, upper pair of supra-antennal bristles wider apart than the smaller lower pair, antennæ small, yellowish, obscured above, palpi yellow.

Thorax brownish-yellow, with only two scutellar bristles, pleuræ yellow, mesopleura bare.

Abdomen dull black with very narrow whitish-yellow hind margins to all segments, and the basal and discal portion of all segments more or less brownish-red, hypopygium small and greyish, anal organ stout and yellow.

Legs yellow with hind knees obscured, front tarsi slender, hind femora with a few not very long hairs beneath at base, cilia to hind tibiæ inconspicuous.

Wings with a yellow tinge, venation much as in *innocens*. Halteres yellow.

Length about ·75 mm.

Locality. Mahé: Cascade Estate, about 800—1500 feet. Two males.

Note. Two specimens, No. 1 from Mahé, Cascade Estate, about 800 feet and over, and No. 2, also from Mahé, Cascade Estate, though having pale halteres and bare pleuræ differ from *media* in their darker colour, and rather longer costa and from each other in that No. 1 has a dull abdomen, somewhat stout front tarsi, longer costa with longer and more scanty ciliation and subcostal vein ending only slightly more than half-way between humeral cross-vein and end of costa; while No. 2 has somewhat shining abdomen, and subcostal vein ending much nearer to end of costa than to humeral cross-vein.

19. *Aphiochæta latinervis*, n. sp. (Plate **5**, fig. 11).

♂. Frons greyish-black, longer than wide, inner bristles of lower frontal row placed

beneath the outer and near the eye margin, supra-antennal bristles almost equally large, upper pair wider apart than the lower, antennæ very small, brownish-black, palpi yellow.

Thorax brownish-black with a tendency to red, scutellum with only two strong bristles, pleuræ the colour of the thorax, mesopleura bristly.

Abdomen dull black, hind margin of the sixth segment and the somewhat hidden hypopygium grey, anal organ short and grey.

Legs yellow, hind legs somewhat dusky, front tarsi stout, cilia on hind tibiæ inconspicuous.

Wings (fig. 11) with the costa and second thick vein remarkably thickened and the fork very indistinct. Halteres brownish-black.

Length about 1 mm.

Locality. Mahé: Anonyme Island, from grass, or ferns, or trees, I. 1909. One male.

20. *Aphiochæta soluta*, n. sp. (Plate **5**, fig. 12).

Frons black, somewhat shining, longer than broad, inner bristles of lower frontal row placed almost immediately beneath the outer ones and close to the eye margin, upper pair of supra-antennal bristles placed wider apart than the almost equally large lower pair, antennæ small, brownish-black, palpi dusky yellow.

Thorax with a tendency to red, scutellum with only one pair of bristles, pleuræ brownish-yellow, mesopleura with a number of fine bristles and 1—2 stronger ones.

Abdomen black with a greyish gloss in some lights, hypopygium small, not very prominent, anal organ stout, dusky yellow.

Legs yellow with hind knees darkened, cilia to hind tibiæ distinct, about 8—10 in number, hind femora with a ciliation of about 7 long curved hairs at base beneath, front tibiæ somewhat thickened.

Wings (fig. 12) with long costal ciliation and narrow fork, first thin vein very evenly curved. Halteres yellow.

Length from 1·5 mm. ♂, to 2 mm. ♀.

Locality. Silhouette: forest above Mare aux Cochons, 2. IX. 1908. Mahé: Cascade Estate, about 800 feet and over; high forest of Morne Blanc and Pilot, X.—XI. 1908; Mare aux Cochons district, about 1500 feet, 26. I.—2. II. 1909; scrubby forest vegetation, top of Mount Sebert, 1800 feet or more, I. 1909. Four males, twelve females.

Note 1. Two males from Mahé, Cascade Estate, about 800 feet and over are very much like *soluta* but the lower row of frontal bristles are normally arranged, the mesopleura bears one strong bristle standing out distinct from the other minute bristles, the hind femora at the base beneath bear a closely-set cilia of short curved hairs in the place of the seven long curved hairs of *soluta* ♂. The hind margins of the abdominal segments are narrowly yellowish. It is probably a distinct species.

Note 2. There is probably yet another species near *soluta* in the collection, but I refrain from naming it because the British species have taught me that this group is a very difficult one and requires further study based upon long series.

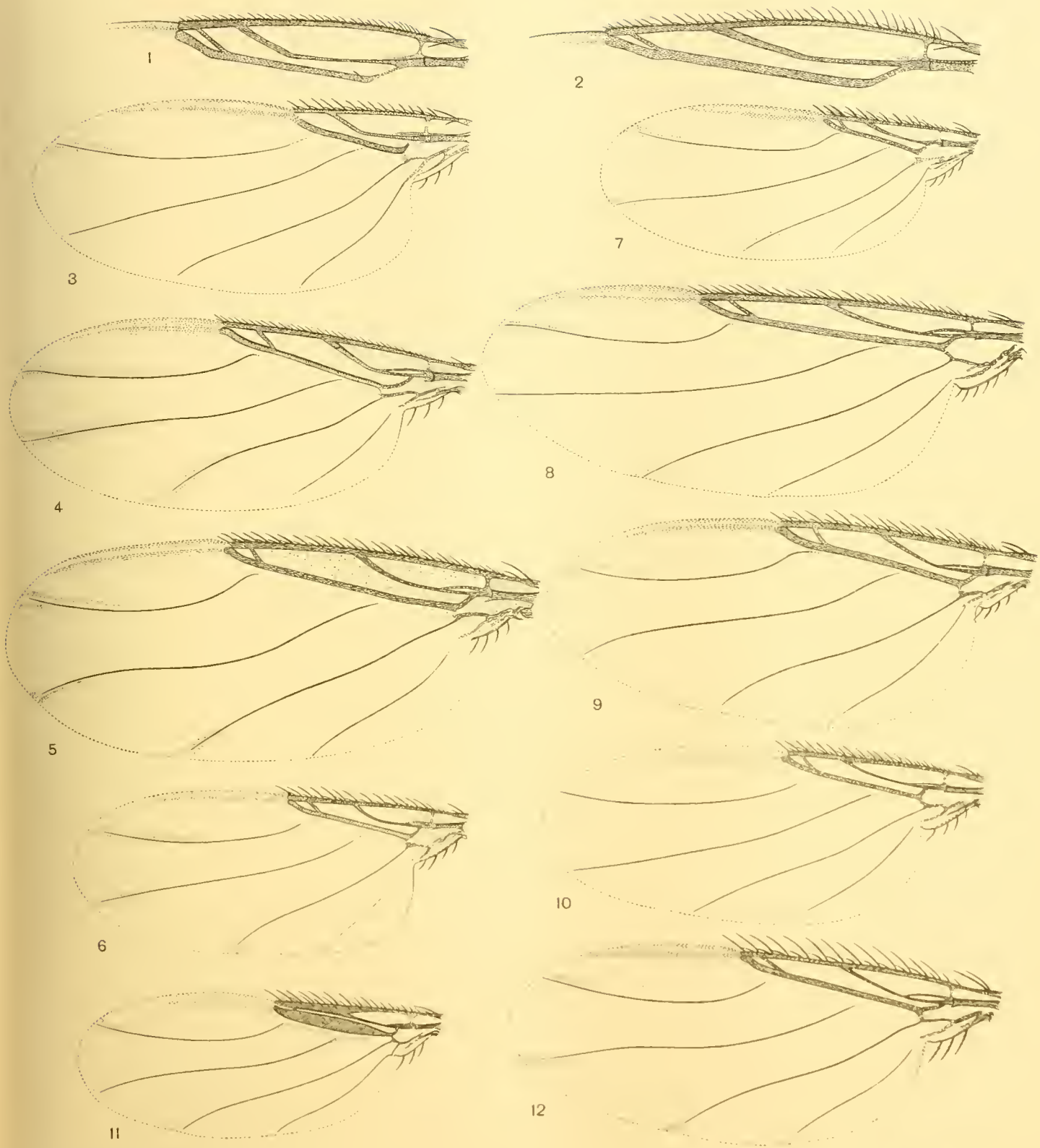
♂. Resembling the last two, the lower row of frontal bristles normal but the two inner bristles of this row placed nearer the outer bristles than in the last species, upper pair of supra-antennal bristles not so wide apart as in either of the last two species, mesopleura as in *soluta*, hind femora beneath with short hairs but not with a closely set cilia as in the last species. Differing from each of the above species in having long bristles on the hind margin of the sixth segment and about four long bristles on each side of the hypopygium, and in the cilia to hind tibiæ, being stronger especially about the middle of the tibia and the legs somewhat darker in colour.

♀. Resembling the male and differing from the female of *soluta* in the position of the lower row of frontal bristles.

Locality. Mahé: Cascade Estate, about 800 feet and over; from near Morne Blanc, X.—XI. 1908. Three males, one female.

EXPLANATION OF PLATE 5.

Fig. 1. *Dohrniphora cleghorni*, ♂ costal margin of wing.
Fig. 2. *Dohrniphora* sp., ♀ costal margin of wing.
Fig. 3. *Aphiochæta aculeipes*, ♂ wing. × 57.
Fig. 4. *Aphiochæta limbata*, ♂ wing. × 66.
Fig. 5. *Aphiochæta egena*, ♀ wing. × 54.
Fig. 6. *Aphiochæta viduata*, ♀ wing. × 57.
Fig. 7. *Aphiochæta innocens*, ♀ wing. × 57.
Fig. 8. *Aphiochæta extans*, ♀ wing. × 45.
Fig. 9. *Aphiochæta planipes*, ♂ wing. × 51.
Fig. 10. *Aphiochæta spreta*, ♂ wing. × 63.
Fig. 11. *Aphiochæta latinervis*, ♂ wing. × 60.
Fig. 12. *Aphiochæta soluta*, ♀ wing. × 48.



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DIPTERA PHORIDAE

No. IX.—ON THE MYSIDACEA AND EUPHAUSIACEA COLLECTED IN THE INDIAN OCEAN DURING 1905.

By W. M. Tattersall, D.Sc., *Keeper of the Manchester Museum.*

(Plates **6** and **7**.)

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 2nd March, 1911.

I am indebted to the courtesy of Professor Stanley Gardiner for the opportunity of examining the collection of Schizopoda, with which the following account deals, made by him in the Indian Ocean in the year 1905.

The collection is by far the largest individual one made in the Indian Ocean and is a valuable addition to our knowledge of the Schizopod fauna of that sea. It contains thirty-six species as against a total of thirty-two species, the sum of the results of previous observations on this group of Crustacea in that locality. Only ten of the species here recorded have hitherto been noted from the Indian Ocean so that the present collection adds twenty-six species to its fauna and brings the total number of species of Schizopoda known from these waters up to fifty-eight.

Much, however, still remains to be done, especially with regard to the *Mysidacea*, before the Schizopod fauna of the Indian Ocean can be said to be completely or even nearly elucidated. One had hoped that Professor Gardiner's collection would have thrown considerable light on the bottom living species of tropical *Mysidacea* but it contained only one specimen, of a known species, of forms which fall into that category*.

Of pelagic *Mysidacea* the *Sealark* captured fourteen species, two of which are new to science and belong to two genera recently instituted by Hansen for *Siboga* specimens. Of the remainder, four are known only from the *Siboga* material while a fifth has hitherto only been captured by the *Valdivia* expedition, naturally enough in the same locality as by the *Sealark*.

As regards the *Euphausiacea*, Professor Gardiner was distinctly more successful. In all twenty-two species were collected, a number which compares very favourably with the total of twenty-five taken by the *Siboga* expedition.

* [We intentionally ran most of our dredgings on the edges of the banks we visited, while on their surfaces we were particularly investigating upgrowing banks. The ground was generally rough and unsuitable for catching *Mysidacea*. Our dredges also were built so as to bite deeply into the ground. In spite of these facts I cannot understand the absence of *Mysidacea* unless they are really scarce on these oceanic coral banks. J. Stanley Gardiner.]

The Schizopod fauna of the Indian Ocean as evinced by the present collection presents no very marked characteristics. No fewer than fourteen of the species of *Euphausiacea* are common to both the Atlantic and Pacific Oceans. Of the remaining eight, two, *Stylocheiron elongatum* and *Euphausia hemigibba* are known only from the Atlantic and Indian Oceans while the remaining six are Pacific forms. Of the *Mysidacea*, the species of *Gnathophausia* and *Eucopia* and *Euchætomera typica* are bathypelagic species of wide distribution and the surface form, *Siriella thompsoni*, has also an extensive range in the tropical and subtropical waters of the globe. *Siriella gracilis* is, up till now, exclusively a Pacific species while the remainder are known only from one or two records, all in the Pacific or Indian Oceans, so that their geographical range cannot yet be said to be known.

In the preparation of this report I have received much valuable help from my friend Dr H. J. Hansen. Through his courtesy I was allowed to see an advance proof of his *Siboga* report and thereby saved the trouble of describing several new species therein described and enabled to work over my collections with his latest views before me. Evidence of the debt I owe to Dr Hansen will be found on almost every page of this report and I wish to express to him my best thanks.

Order MYSIDACEA.

Sub-order LOPHOGASTRIDA.

Family **Lophogastridæ.**

Genus Lophogaster, M. Sars.

1. *Lophogaster typicus*, M. Sars, var.

*Station**. South of the Saya de Malha Banks, 145 fms., one ovigerous female, 20 mm.

I have compared this specimen with British examples of the species and find the following small points of difference :—

(1) The median-dorsal area of the carapace is finely punctate but there is an entire absence of the coarser tubercular granules characteristic of northern specimens.

(2) The median fork of the rostral plate is the same length as the lateral forks whereas in British specimens it is slightly longer.

(3) The rostral plate covers the greater part of the cornea of the eyes so that the latter are much more hidden than in the more typical forms. It may also be noted, though the character has no special importance, that the pigment of the eyes in the present specimen is much paler than I have noticed in British examples of the species.

(4) The prominent lobe on the inner distal corner of the third joint of the antennular peduncle, is slightly serrate on the margin, instead of smooth.

* The Stations where the different species were caught will be found recorded in Trans. Linn. Soc. London, ser. 2, Zool., vol. xii. pp. 169—174.

There are six teeth, including the terminal one, on the outer margin of the antennal scale while the structure and armature of the telson agree exactly with the type. Having but one specimen from the Indian Ocean, I am unable to decide whether the small points of difference, noted above, are constant and thus deserving of varietal or even specific rank. The species has never before been recorded from the Indian Ocean but to judge from Ortmann's paper (1906) it has a very wide geographical distribution, practically world-wide in temperate and tropical seas. The localities given by Sars in his *Challenger* report and by Stebbing (1902), to the south of Cape Town, are the nearest to the Saya de Malha Banks at which the species has been captured. It should be mentioned that the present specimen has the ventral armature of the pleon, recently described by me (1909) for Mediterranean specimens. Hansen (1910) has confirmed my observations on a new species of the genus, *L. intermedia*, captured by the *Siboga* expedition in the waters round the Netherland East Indies. *Lophogaster* was the only bottom-haunting Schizopod captured by the *Sealark*.

Genus Gnathophausia, Will.-Suhm.

2. *Gnathophausia calcarata*, G. O. Sars.

G. calcarata, G. O. Sars, 1883.
G. calcarata, G. O. Sars, 1885.
G. bengalensis, Wood-Mason, 1891.
G. calcarata, Ortmann, 1906.

Station. N., near the Chagos Archipelago, 0—600 fms., one, 26 mm. from the eye to the apex of the telson.

The epimeral plate of the sixth segment of the pleon agrees in form with that figured by Ortmann (1906), pl. I., fig. 2*a*, for a specimen 42 mm. long. The rostrum measures 12 mm. from the level of the eyes to its apex. The postero-lateral spines of the carapace extend to the middle of the telson and the posterior median dorsal spine to the third segment of the pleon. The specimen is the smallest yet recorded for the species. *G. calcarata* is a widely distributed form in the Pacific Ocean but the present record is the most westerly one known for that ocean.

Family **Eucopiidæ.**

Genus Eucopia, Dana.

3. *Eucopia unguiculata* (Will.-Suhm).

Chalaraspis unguiculata, Will.-Suhm, 1875.
Eucopia australis (pars), G. O. Sars, 1885.
Eucopia unguiculata, Hansen, 1905 (2).
Eucopia unguiculata, Hansen, 1910.

Station. N., near the Chagos Archipelago, 0—600 fms., one, 20 mm.

I am not aware that this species has ever before been recorded from the Indian Ocean though known from the East Indian Archipelago and off the coasts of California. It is widely distributed in the Atlantic.

4. *Eucopia sculpticauda*, Faxon.

E. sculpticauda, Faxon, 1895.
E. sculpticauda, Hansen, 1905 (1).
E. intermedia, Hansen, 1905 (1).
E. sculpticauda, Hansen, 1910.

Station. aa, near Providence Island, 900 fms., one, 33 mm.

Alcock has recorded *E. sculpticauda* from the Indian Ocean. This is the only previous record for these waters known to me.

Sub-order MYSIDA.

Family **Mysidæ.**

Subfamily **Siriellinæ,** Norman.

Genus Siriella, Dana.

5. *Siriella thompsoni* (H. Milne-Edwards).

Cynthia thompsoni, Milne-Ed., 1837.
Siriella thompsoni, Hansen, 1910.

Station. n, north of the Saya de Malha banks, surface, three males, 6·5—8 mm., one female, 4·5 mm.

Hansen's paper, quoted above, should be consulted for the full synonymy of this form. To the list of synonyms I would add *S. edwardsi*, Paulson = *S. similis*, Czerniavsky.

6. *Siriella gracilis*, Dana.

S. gracilis, Dana, 1852.
S. gracilis, Sars, 1885.
S. gracilis, Hansen, 1910.

Stations. Q, Chagos Archipelago, surface, one female, 2 mm.; n, north of Saya de Malha banks, surface, five males, 7 mm., and one female, 4 mm.; dd, Alphonse Island, surface, one male, 7 mm.

7. *Siriella æquiremis*, Hansen, ?.

S. æquiremis, Hansen, 1910.

Stations. Q, Chagos Archipelago, surface, four females, 4—7 mm.; oo, Amirante Islands, surface, one female, 5 mm.

Hansen (*loc. cit.*) has described from the collections made by the *Siboga* expedition, no fewer than thirteen new species of the genus *Siriella* and has revised the genus on a sound basis. Unfortunately, however, species can only be satisfactorily determined from male specimens. As the material of the present species is represented by female specimens only, I am somewhat doubtful as to its correct determination, but from the general structure it seems to agree with *S. æquiremis*. Before receiving Hansen's paper

I had named these specimens *S. paulsoni*, Kossmann, and I am still inclined to think that when male specimens of the latter species are discovered, *S. æquiremis* will be found to be synonymous with *S. paulsoni*. None of the *Sealark* specimens are as large as the single specimen, recorded as *S. paulsoni*, from Ceylon by me (1906), but, otherwise, show the closest agreement with the latter. After several years' preservation, no trace of the distinctive colouration of *S. æquiremis*, mentioned by Hansen, can be discovered.

Genus Hemisiriella, Hansen, 1910.

8. *Hemisiriella gardineri*, n. sp. (Plate 6, figs. 1—5).

Stations. w, Farquhar Islands, surface, two males, immature, 6 mm.; oo, Amirante Islands, surface, one male, immature, 6 mm.

Form moderately slender.

Carapace not very short, laterally leaving only part of the last thoracic segment exposed, dorsally leaving the whole of the last and part of the penultimate segments of the thorax exposed; moderately produced anteriorly with the tip rounded.

Eyes rather small, pigmented area occupying less than half the whole eye.

Antennular peduncle (fig. 1) with the third joint about equal to the first and one and a half times as long as broad.

Antennal scale (fig. 1) about two and a half times as long as broad, reaching to about the middle of the third joint of the antennular peduncle, terminal lobe broader than long, about one-fifth of the entire length of the scale, terminal spine of the outer margin strong.

Antennal peduncle (fig. 1) as long as the scale, with the second joint almost three times as long as the third.

Third pair of thoracic limbs (fig. 3) without any transverse articulation on the sixth joint; dactylus distinct and slightly curved; terminal brush of setæ longer than the dactylus.

Fourth pair of thoracic limbs (fig. 4) extremely elongate, reaching when extended to the end of the antennular peduncle; sixth joint with a distinct articulation anterior to the middle; dactylus very rudimentary and hidden in the long terminal brush of setæ.

Pleopods in the male with the pseudobranchial rami on the second to fourth pairs spirally twisted and the endopods and exopods of the third and fourth pairs similar, without modified setæ.

Telson (fig. 5) a little longer than the last segment of the pleon and about three times as long as broad at its base; constricted somewhat near the base after which the margins converge gradually to a broadly rounded apex; at the constriction the lateral margins are armed by two rather long spines, then follows a short unarmed part of the lateral margins after which the latter bear about eighteen spines which are arranged distally in groups of five, four, three and five spines; terminal spines at the apex, the longest, about one-ninth of the total length of the telson; between the terminal spines there are three subequal spinules and a pair of plumose setæ.

Inner uropod (fig. 5) slightly longer than the outer, its inner margin armed with a row of spines, arranged more or less in groups and extending to the apex.

Outer uropod (fig. 5) with the terminal joint about one-fourth of the length of the proximal joint and about one and a half times as long as broad; outer margin of the proximal joint armed with seven spines which occupy considerably more than one-half of the margin, the proximal four very distantly placed, the terminal three situated at the junction with the terminal joint.

Length of male specimens, not quite mature, 6 mm.

Figs. 2, 3 and 4 on Plate **6** show the endopods of the second, third and fourth thoracic limbs magnified to the same scale and sufficiently explain these appendages.

The genus *Hemisiriella* was founded by Hansen for two species which differ from *Siriella* in the following points :—

(1) In having the carapace unusually short so that it leaves fully exposed, both laterally and dorsally, the last two segments of the thorax.

(2) In the comparative greater length of the third joint of the antennular peduncle.

(3) The small size of the antennal scale.

(4) In several small details in the structure of the mandibles.

(5) In having the third pair of thoracic limbs (first pair of thoracic legs according to the terminology adopted by Hansen, the first and second pair of thoracic limbs being called by that author maxillipede and gnathopod respectively) greatly elongated, with the dactylus very rudimentary and hidden in a brush of peculiar setæ.

It is with very great diffidence that I refer the present species to the same genus, for it agrees with *Hemisiriella* in only two of the above five points, viz. in the small size of the antennal scale and in the form of the mandibles.

As regards the last of the five points already mentioned, *H. gardineri* shows a remarkable feature. It has one of the thoracic limbs considerably elongated and exhibiting the same structure as in *H. parva* and *H. pulchra* but, instead of it being the third thoracic limb as in the latter two species, it is the fourth thoracic limb of *H. gardineri* which is thus elongated. I have been led to refer *H. gardineri* to the genus *Hemisiriella* mainly on its possession of an elongate thoracic limb, agreeing in its essential structure with those described for the genus though differing in position. It is quite probable that future observers may regard the difference in position of the elongate limb as of generic importance for it would appear to be an exactly parallel instance to that seen in the genera *Nematoscelis* and *Nematobrachion* among the *Euphausiacea*. Attention may be directed to Calman's remarks on the latter genera (Calman, 1905).

For the rest, *H. gardineri* resembles a true *Siriella* in the form of the carapace, antennular peduncle and telson. The species is sufficiently distinguished by the combination of characters presented by the uropods, antennal scale and thoracic limbs.

Subfamily, **Gastrosaccinæ**, Norman.

Genus Gastrosaccus, Norman.

9. *Gastrosaccus indicus*, Hansen.

G. indicus, Hansen, 1910.

Stations. u, Farquhar Island, surface, one male, 7 mm.; v, Farquhar Island, surface, two females, 7 mm.; y, Providence Island, surface, one male, 7 mm.

Hitherto, only known from Hansen's records from the Netherland East Indies, where the types were captured by the *Siboga* expedition.

10. *Gastrosaccus parvus*, Hansen.

G. parvus, Hansen, 1910.

Stations. u, Farquhar Island, surface, one male, 6 mm.; x, Providence Island, surface, one male, 7 mm.

This species, also described in the first place from the *Siboga* collections, has a distribution coinciding with that of the last.

Subfamily **Leptomysinæ**, Norman.

Genus Euchætomera, G. O. Sars.

11. *Euchætomera typica*, G. O. Sars.

E. typica, G. O. Sars, 1885.
E. limbata, Illig, 1906.

Stations. bb, near Providence Island, 0—140 fms., one female, 9 mm.; kk, Amirante Islands, 100 fms., one female, 9 mm.

I have already expressed the opinion (Tattersall, 1909), that *E. limbata*, Illig, would prove to be a synonym of *E. typica*, Sars, and, after an examination of actual specimens and a comparison of them with the type species, I am fully confirmed in my opinion. *E. limbata* is stated to differ from *E. typica* in the presence of a finger-like process on the eyes and in having an armature of small teeth on the anterior margin of the carapace. Both these supposed differences disappear on an examination of Sars' types, for the latter possess finger-like processes on the eyes and the armature of small teeth on the carapace. I would further note that both Sars' types and those in the present collection have the lateral posterior margins of the first four segments of the pleon and the entire posterior margin of the fifth and sixth segments of the pleon coarsely serrate.

The present specimens, though apparently sexually mature, are smaller than both Sars' and Illig's types.

E. typica has not before been recorded from the Indian Ocean.

12. *Euchætomera oculata*, Hansen.

E. oculata, Hansen, 1910.

Stations. p, near Farquhar Island, 600 fms., one female, 8 mm.; kk, Amirante Islands, 150 fms., one female, 8 mm.

These specimens are in substantial agreement with Hansen's recent description and I am convinced that they belong to the same species. But I am by no means certain that this form is distinct from *E. glyphiophthalma*, Illig. The only important difference in the published descriptions, is that the antennal scale of the latter species is described as four and a half times as long as broad while in *E. oculata* the scale is three and a half times as long as broad. Illig's figure does not agree exactly with his description, but brings the species much more into line with *E. oculata*.

Subfamily **Mysinæ**.

Genus Anisomysis, Hansen.

13. *Anisomysis bifurcata*, n. sp. (Plate **7**, figs. 1—6).

Stations. A, north of the Chagos Islands, 150 fms., one female, 3 mm.; v, Farquhar Island, surface, one male, 5·5 mm.; w, Farquhar Island, surface, one male, 5·5 mm.

Carapace covering all but the last thoracic segment; produced in front into a broad triangular plate with a pointed apex, which does not reach to the distal end of the first joint of the antennular peduncle.

Pleon with the first five segments sub-equal, sixth segment nearly twice as long as the fifth; at the ventral postero-lateral corners of each of the first five segments of the pleon there is a small blunt spine, those on the first segment being larger than any of the others.

Eyes rather large, pigment black.

Antennular peduncle (fig. 1) in the male with the terminal lobe large, longer than broad with the distal extremity considerably narrower than the proximal and slightly curved.

Antennal scale (fig. 2) barely over-reaching the antennular peduncle, about five times as long as broad, the second joint about one and a half times as long as broad; lanceolate in shape and setose all round.

Mouth parts and thoracic limbs agreeing essentially with those given in Hansen's definition of the genus, except that I was unable to make out any subjoints in the sixth joint (tarsus) of the third thoracic limb (the only one remaining in any of the specimens, after the first and second pair).

First, second, third and fifth pleopods in the male, rudimentary plates as in the female; fourth pair (fig. 5) reaching beyond the sixth segment of the pleon, to the level of the otocyst of the inner uropods, distal peduncular joint three times as long as broad, exopod with the first joint rather more than four times as long as the second, third joint twice as long as the latter, somewhat swollen at the extremity and bearing two terminal branches, the inner with a thickened basal part and a tapering terminal part adorned with setæ along both margins, outer branch unjointed, in the form of a long slender spine.

Telson (fig. 6) as long as the last segment of the pleon and two and a half times as long as broad at its base; very deeply cleft for more than one-third of its length, cleft

very wide and unarmed, so that the distal part of the telson has the form of a two-pronged fork; lateral margins armed along the distal two-thirds of the margin with six spines, three of which are on the forks of the prong, the distal one at the tip.

Uropods long and slender, about one and a third times as long as the telson, the inner one very slightly longer than the outer, without spines on its inner ventral margin.

Length of an adult male, 5·5 mm.

I have been somewhat puzzled as to what genus this species should be referred to and after much hesitation I have placed it in the genus *Anisomysis*, Hansen, as being the one with which it agrees most closely in its main features. It differs in having the tarsus of the thoracic limbs apparently undivided and in the striking form of the telson. In having the outer terminal branch of the fourth pleopods in the male unjointed it also presents a small point of difference. But otherwise it agrees so closely with Hansen's type species, the only one known*, *A. laticauda*, that I have preferred to refer it to the same genus rather than erect a new one for its reception. The form of the telson will at once serve to distinguish it from all known Mysidæ.

Species of uncertain generic position.

14. "*Mysis*" *quadrispinosa*, Illig (Plate **6**, figs. 6, 7).

M. quadrispinosa, Illig, 1906.

Stations. I, north of the Chagos Islands, 500 fms., one female, 5 mm.; M, Chagos Islands, 75 fms., one female, 3 mm.

This species was described by Illig from a female captured at the Chagos Islands by the *Valdivia* expedition, and Illig rightly left its generic position unsettled till male specimens should be taken. The present specimens were captured in the same locality as Illig's type and appear to be the same species, but since both specimens are females and still immature, it has not been found possible to throw any light on its generic affinities. I am able, however, to add one or two particulars to Illig's brief description which will serve for the better elucidation of its characters.

The pleon is distinctly hispid all over and has the first five segments subequal in length, the sixth being almost twice as long as the fifth.

There does not seem to be any hispidity on the thorax. The carapace is produced into a short acutely pointed rostral projection which reaches about half way along the first joint of the antennular peduncle.

The antennal scale is slightly longer than the antennular peduncle and twice as long as its own. It is about six times as long as broad, narrowly lanceolate in shape, setose all round and having a small terminal joint. The outer distal corner of the joint from which the scale springs is produced into a short stout spine-like projection.

The telson (fig. 7) is only slightly shorter than the last segment of the pleon and twice as long as broad at its base. It is deeply cleft for two-fifths of its length, the cleft

* While this paper was in the press, two further species of *Anisomysis* have been described from Japan by Nakazawa (Ann. Zool. Japon., vol. vii. pt. iv. 1910). In both species the telson is described as entire and, as such, cannot be confused with the present species.

armed with a pair of plumose setæ at the apex and seven to ten small spines on each lateral margin. The tip of each lobe of the cleft bears three short stout spines and the lateral margins of the telson are armed along their distal half with seven small spines. The dorsal surface of the telson is somewhat deeply channelled in the median line.

The inner uropod is about once and two-thirds as long as the telson and is armed along its inner margin with ten long, rather stout spines, somewhat distantly set and not reaching to the apex. The outer uropods are a little longer than the inner.

Length of an immature female, 5 mm.

Illig makes no mention of the hispidity of the pleon or of the spines arming the inner uropod, and the shape of the telson as he depicts it is somewhat different from that shown in fig. 7, but I have little doubt that the two forms belong to the same species.

Order EUPHAUSIACEA.

Family **Euphausiidæ.**

Genus Thysanopoda, H. Milne-Edw.

15. *Thysanopoda tricuspidata*, H. Milne-Edw.

Stations. D, surface, two, 5 and 5·5 mm.; P, 20 fms., twelve, 7—11 mm.; Q, surface, twenty; a, 150 fms., one, 5 mm.; e, 300 fms., one, 10 mm.; n, surface, ten; q, 1000—0 fms., two, 10 and 12 mm.; s, 250—0 fms., five, 5—15 mm.; dd, surface, thirteen; ll, 750 fms., one, 17 mm.

16. *Thysanopoda æqualis*, Hansen.

T. æqualis, Hansen, 1905.
T. æqualis, Tattersall, 1909.
T. æqualis, Hansen, 1910.

Stations. C, 1200—0 fms., eight, 8—16 mm.; L, 75 fms., one, 15 mm.; N, 600—0 fms., two, 12 mm.; O, 180—0 fms., one, 8 mm.; Q, surface, one, 13 mm.; c, 300 fms., one, 9 mm.; p, 600 fms., one; q, 1000—0 fms., four, 12—17 mm.; r, 500—250 fms., one, 16 mm.; s, 250—0 fms., two, 14 and 16 mm.; s, 750—500 fms., two, 12 and 16 mm.; aa, 900—0 fms., two, 12 and 13 mm.; ll, 750 fms., four, 13—16 mm.

I have nothing to add to Hansen's description of this species, with which these specimens are in perfect agreement. It is very closely allied to *T. obtusifrons*, G. O. Sars, from which it is distinguished by the shape of the antennular lobe and the structure of the copulatory organs of the first pleopods in the male. I would point out that both species have the telson armed dorsally with two rows of many spines, which, when broken off, have the appearance of two serrated keels. Sars has described this character for *T. obtusifrons*, and it serves as a ready means of distinguishing these two forms from their allies.

17. *Thysanopoda monacantha*, Ortmann (Plate **7**, fig. 8).

T. monacantha, Ortmann, 1893.
T. agassizii, Ortmann, 1894.

T. agassizii, Hansen, 1910.
T. monacantha, Hansen, 1911.

Stations. C, 1200—0 fms., two, 20 mm.; q, 1000—0 fms., three, 12—19 mm.; s, 750—500 fms., one, 23 mm.; ll, 750 fms., eighteen, 13—28 mm.; mm, 400 fms., fifteen, 17—24 mm.; nn, 200 fms., three, 24 mm.

I had already named these specimens as *T. monacantha*, Ortmann, when I received Hansen's report on the *Siboga* collections. In this report Hansen had regarded *T. monacantha* and *T. agassizii* as distinct though very closely allied forms, but in his most recent paper (1911) he has arrived at the conclusion that their separate specific identity cannot be maintained. With this conclusion, I am in entire agreement. I give (fig. 8) a figure of the copulatory apparatus on the first pleopod of the largest male in the collection. Dr Hansen has seen this figure and is inclined to think that the specimen from which it was taken is immature.

18. *Thysanopoda microphthalma*, G. O. Sars.

T. microphthalma, Sars, 1885.
T. distinguenda, Hansen, 1905.
T. distinguenda, Holt and Tattersall, 1906.
T. microphthalma, Hansen, 1910.

Stations. s, 500—750 fms., one female, 18 mm.; ll, 750 fms., one female, 31 mm.; mm, 400 fms., four females, 20—27 mm. and one male (immature), 20 mm.

The only male specimen is immature so that the structure of the copulatory organs cannot be ascertained. This renders the identification of the species very uncertain. I have very carefully compared these specimens with Atlantic representatives of *T. microphthalma* and I am unable to find any appreciable differences between them. But I cannot overlook the possibility that the *Sealark* forms may be *T. orientalis*, Hansen, a species very closely allied to *T. microphthalma* and only distinguishable by the structure of the first pair of pleopods in the male.

19. *Thysanopoda pectinata*, Ortmann (Plate 7, fig. 7).

T. pectinata, Ortmann, 1893.
T. pectinata, Hansen, 1905 (2).
T. ctenophora, Illig, 1908 (1) (*fide* Illig, 1908 (2)).
Parathysanopoda foliifera, Illig, 1909.
T. pectinata, Hansen, 1911.

Stations. N, 600—0 fms., one female, 18 mm.; ll, 750 fms., one male, 33 mm.

I had already named these specimens as *T. pectinata*, Ortmann, when Hansen's report on the *Siboga* collections came to hand. On consulting him with reference to these specimens, he told me that he believed they represented a new form, distinguished from *T. pectinata* by the somewhat longer and more acute rostrum. In his recent paper (1911), however, he has expressed the opinion that the Pacific and Atlantic forms are specifically inseparable. This confirms my earlier conclusions as to the name to be attached to the *Sealark* specimens.

I append a brief description of my specimens and give a figure of the copulatory apparatus on the first pleopods of the male.

Carapace without lateral denticles and gastro-hepatic groove; produced in front as a triangular plate with the terminal angle slightly less than 90°, the apex pointed and very slightly upturned, reaching about half-way up the basal joint of the antennular peduncle and not as far forward as the eyes; the anterior third of the carapace is adorned in the mid-dorsal line by a low keel which does not reach the apex of the rostral plate and in front of which is a median depression which latter is produced laterally for a little way on each side of the keel.

Antennular peduncle with a rather long slender spine on the outer corner of the basal joint; the lobe from the inner corner of the basal joint is in the shape of a quadrangle with the outer distal corner produced slightly outward and forward, the anterior margin being straight or lightly concave, and deeply serrate or pectinate, with about twelve or thirteen spiniform teeth; the lobe proceeds from the usual raised hispid cushion, extends for rather more than half-way up the second joint of the antennular peduncle and is less than half the width of the basal joint at its base but considerably more than half the width of the second joint at its distal margin; the lobe from the inner corner of the second joint of the antennular peduncle is rather large, sub-quadrangular in shape, without spine or process.

The antennal scale reaches about half-way up the third joint of the antennular peduncle; the basal ventral spine is about one-third of the length of the scale, long, slender and smooth.

The telson has two pairs of dorsal denticles and the inner uropod reaches to the apex of the telson, the outer uropod being somewhat longer.

The figure (fig. 7) will best explain the structure of the copulatory apparatus on the first pleopod of the male. The nomenclature of the parts is that suggested by Hansen. A spine-shaped process, p^1, is present. The terminal process, p^2, is somewhat stout, reaching to the base of p^4, and widening distally into more or less spatulate form. The proximal process, p^3, is about as long as p^2, sickle shaped, sharply pointed at the tip and having a stout tooth or heel on the inner side of the first curve.

Genus Euphausia, Dana.

20. *Euphausia mutica*, Hansen.

E. pellucida (pars), G. O. Sars, 1885.
E. mutica, Hansen, 1905.
E. mutica, Tattersall, 1906.
E. mutica, Hansen, 1910.

Stations. C, 1200—0 fms., two; D, surface, four; F, surface, three; H, surface, two; L, 75 fms., two; N, 600—0 fms., sixteen; O, 180—0 fms., one; P, 20 fms., twenty-one; Q, surface, thirteen; c, 225 fms., four, 250 fms., seven, 275 fms., sixteen, 300 fms., fifteen; d, surface, two; e, 300 fms., four; k, 100 fms., one; n, surface, one; o, surface, one; q, 1000—0 fms., seven; r, 500—250 fms., one; s, 250—0 fms., six, 750—0 fms., one;

u, surface, three; v, surface, two; w, surface, two; y, surface, four; aa, 900—0 fms., twelve; bb, 140—0 fms., four; ee, surface, ten; gg, surface, eight; hh, surface, seven; kk, 250 fms., twenty-four, 300 fms., thirteen; ll, 750 fms., eighteen; mm, 400 fms., sixteen; nn, 200 fms., twenty-nine.

21. *Euphausia similis*, G. O. Sars.

E. similis, G. O. Sars, 1883.
E. similis, G. O. Sars, 1885.
E. similis, Hansen, 1910.

Stations. C, 1200—0 fms., seven; F, 50 fms., one, 100 fms., one, 150 fms., one; N, 600—0 fms., twelve; p, 500 fms., three; q, 1000—0 fms., seven; s, 250—0 fms., five, 750—500 fms., three; aa, 900—0 fms., ten; kk, 250 fms., three; ll, 750 fms., nineteen; mm, 400 fms., four; nn, 200 fms., fifteen.

These specimens belong to the var. *crassirostris* described by Hansen (1910).

22. *Euphausia hemigibba*, Hansen.

E. hemigibba, Hansen, 1910.

Stations. C, 1200—0 fms., ten; N, 600—0 fms., one male, two females; c, 225—300 fms., three males, four females; s, 750—500 fms., one male; y, surface, two males; ll, 750 fms., two; mm, 400 fms., one male, one female.

Hansen (1910) has lately divided the species *E. gibba* into four species, mainly on the structure of the copulatory organs on the first pleopods in the male. Females are extremely difficult or almost impossible to name accurately but from an examination of every male of the *gibba* group in this collection it appears that only two species of the group, this and the following one, are represented.

I should mention that the specimens recorded by me from the Mediterranean (1909) as *E. gibba* are in the light of Hansen's work really referable to this form.

23. *Euphausia paragibba*, Hansen.

E. paragibba, Hansen, 1910.

Stations. C, 1200—0 fms., eighteen; L, 125 fms., one male; N, 600—0 fms., five males, five females; Q, surface, two males; p, 600 fms., three; q, 1000—0 fms., two males, one female; r, 500—250 fms., one male, two females; s, 250—0 fms., one female, 750—500 fms., two males; v, surface, one male; y, surface, seven males; kk, 300 fms., two males, one female; ll, 750 fms., thirty-two; mm, 400 fms., five males, three females; nn, 200 fms., seven males, two females.

This species, a Pacific form according to Hansen, is evidently much more abundant in the Indian Ocean than the last species, an Atlantic form.

24. *Euphausia tenera*, Hansen.

E. gracilis, G. O. Sars, 1883.
E. gracilis, G. O. Sars, 1885.
E. tenera, Hansen, 1905.

E. tenera, Hansen, 1910.
nec *E. gracilis*, Dana, 1852.

Stations. C, 1200—0 fms., five; D, 120 fms., one; F, 100 fms., two, 150 fms., three; L, 75 fms., one, 125 fms., one; N, 600—0 fms., four; O, 180—0 fms., two; P, 20 fms., two; Q, surface, seventeen; c, 275—300 fms., five; n, surface, one; p, 500 fms., one; q, 1000—0 fms., one; s, 250—0 fms., forty-eight, 500—750 fms., one; v, surface, one; y, surface, one; aa, 900—0 fms., three; kk, 250—300 fms., three; mm, 400 fms., two; nn, 200 fms., four.

Genus Pseudeuphausia, Hansen.

Euphausia (pars), Sars, 1885.
Euphausia, Stebbing, 1905.
Euphausia (pars), Tattersall, 1906.
Pseudeuphausia, Hansen, 1910.

25. *Pseudeuphausia latifrons* (G. O. Sars).

Euphausia latifrons, G. O. Sars, 1883.
Euphausia latifrons, Sars, 1885.
Euphausia latifrons, Stebbing, 1905.
Euphausia latifrons, Tattersall, 1906.
Euphausia latifrons, Hansen, 1908.
Pseudeuphausia latifrons, Hansen, 1910.

Station. k, 100 fms., one, 5 mm., 300 fms., one, 7 mm.

In 1905 Stebbing pointed out that specimens of this species from near the Cape of Good Hope possessed a lateral denticle on the carapace. In the next year I was able to confirm this observation for specimens from Ceylon and I also pointed out that the leaflet on the antennular peduncle did not agree exactly with Sars' figures. I gave a figure of the antennular leaflet and mentioned the fact that my observations had been confirmed by examination of the type specimens, kindly done for me by Dr W. T. Calman. Hansen (1908) confirmed my description of the antennular leaflet and in 1910 gave a full description of the species, with figures, in the course of which he refers it to a new genus, *Pseudeuphausia*, differing from *Euphausia* mainly in the aberrant condition of the copulatory organs on the first pleopod of the male.

Genus Nematoscelis, G. O. Sars.

26. *Nematoscelis microps*, G. O. Sars.

N. microps, G. O. Sars, 1883.
N. microps, G. O. Sars, 1885.
N. rostrata, G. O. Sars, 1885.
N. microps, Hansen, 1905.
N. microps, Tattersall, 1906.
N. microps, Hansen, 1910.

Stations. A, 50 fms., ten, 75 fms., two, 125 fms., one; B, 50 fms., four; C, 1200—0 fms., five; F, 150 fms., one; L, 50 fms., one; N, 600—0 fms., seventeen; P, 20 fms., one; e, 300 fms., one, 400 fms., one; p, 200 fms., one, 400 fms., one, 500 fms., five, 600 fms., six, 800 fms., two; q, 1000—0 fms., seventeen; r, 500—250 fms., three; s, 250—0 fms., nine, 750—500 fms., six; u, surface, three; v, surface, three; w, surface, one; aa, 900—0 fms., three; bb, 140—0 fms., two; kk, 250 fms., two, 300 fms., four; ll, 750 fms., twelve; mm, 400 fms., nine; nn, 200 fms., ten.

27. *Nematoscelis gracilis*, Hansen.

N. gracilis, Hansen, 1910.

Stations. F, 50 fms., two; N, 600—0 fms., two; q, 1000—0 fms., five; s, 250—0 fms., one, 750—500 fms., one; aa, 900—0 fms., three; ll, 750 fms., three; mm, 400 fms., three.

28. *Nematoscelis tenella*, G. O. Sars.

N. tenella, G. O. Sars, 1883.
N. tenella, G. O. Sars, 1885.
N. tenella, Hansen, 1905.
N. tenella, Hansen, 1910.

Stations. L, 50 fms., one; N, 600—0 fms., three; O, 180—0 fms., one; a, 50 fms., six, 100 fms., one; p, 500 fms., one, 800 fms., three; q, 1000—0 fms., three; r, 500—250 fms., one; s, 250—0 fms., two, 750—500 fms., one; aa, 900—0 fms., four; kk, 300 fms., two; ll, 750 fms., two; mm, 400 fms., one; nn, 200 fms., eight.

Genus Nematobrachion, Calman.

29. *Nematobrachion boöpis* (Calman).

Nematodactylus boöpis, Calman, 1896.
Nematobrachion boöpis, Calman, 1905.
N. boöpis, Holt and Tattersall, 1905 and 1906.
N. boöpis, Hansen, 1905.

Stations. N, 600—0 fms., one, 18 mm.; k, 300 fms., one, 9 mm.; kk, surface, one, 10 mm.

30. *Nematobrachion flexipes* (Ortmann).

Stylocheiron flexipes, Ortmann, 1893.
Nematodactylus flexipes, Calman, 1896.
Nematobrachion flexipes, Hansen, 1905.

Stations. e, 400 fms., one, 11 mm.; k, 250 fms., one, 9 mm.

Calman (1896) was the first to suggest that the *Stylocheiron flexipes* of Ortmann should be referred to his genus *Nematodactylus* (since changed to *Nematobrachion*). Hansen, in 1905, confirmed Calman's suggestion after examining specimens in the Copenhagen Museum.

I am not aware of any records of this form subsequent to Ortmann's original ones from the northern part of the South Atlantic. The present records, therefore, indicate a wide increase in its horizontal distribution and are the first from the Pacific Ocean.

Genus Stylocheiron, G. O. Sars.

31. *Stylocheiron carinatum*, G. O. Sars.

S. carinatum, G. O. Sars, 1883.
S. carinatum, G. O. Sars, 1885.
S. carinatum, Hansen, 1910.

Stations. A, 75 fms., eight, 125 fms., two; B, 100 fms., one; C, 1200—0 fms., eighteen; D, surface, one; F, 150 fms., three; H, surface, three; L, 50 fms., one, 75 fms., two; M, 25 fms., thirteen, 75 fms., four; P, 20 fms., seven; Q, surface, three; a, 25 fms., twenty-one, 50 fms., two, 75 fms., two, 100 fms., one, 150 fms., two; c, 250 fms., four, 275 fms., five, 300 fms., four; d, surface, one; e, 50 fms., one; s, 250—0 fms., six; w, surface, two; bb, 140—0 fms., four; gg, surface, one; kk, surface, one; ll, 750 fms., one; mm, 400 fms., one; nn, 200 fms., one.

32. *Stylocheiron suhmi*, G. O. Sars.

S. suhmi, G. O. Sars, 1883.
S. suhmi, G. O. Sars, 1885.
S. suhmi, Hansen, 1910.

Stations. A, six; B, four; C, 1200—0 fms., three; F, 50 fms., one, 150 fms., one; L, 75 fms., three; M, 25 and 75 fms., one; N, 600—0 fms., one; a, eight; c, 275—300 fms., four; e, 50 fms., three; k, 200 fms., one; p, 200—500 fms., three; s, 250—0 fms., six; u, surface, one; bb, 140—0 fms., four, hand-net, surface, one.

33. *Stylocheiron longicorne*, G. O. Sars.

S. longicorne, Sars, 1883.
S. longicorne, Sars, 1885.
S. longicorne, Hansen, 1910.

Stations. A, two; B, two; C, 1200—0 fms., one; F, 150 fms., one; I, 500 fms., one; M, 25 and 75 fms., two; a, one; c, 275—300 fms., three; e, 200 fms., one; k, 250 fms., one, 300 fms., five; p, 500 fms., two; bb, 140—0 fms., two; kk, surface, one; ll, 750 fms., two; mm, 400 fms., one.

34. *Stylocheiron microphthalma*, Hansen.

S. microphthalma, Hansen, 1910.

Stations. A, seven; B, one; F, 50 fms., two; M, 25 and 75 fms., eight; a, one; c, 275—300 fms., one; s, 250—0 fms., four; gg, surface, one.

35. *Stylocheiron abbreviatum*, G. O. Sars.

S. abbreviatum, G. O. Sars, 1883.
S. abbreviatum, G. O. Sars, 1885.
S. chelifer, Chun, 1896.
S. abbreviatum, Hansen, 1910.

Station. kk, 100 fms., one, 9 mm.

36. *Stylocheiron elongatum*, G. O. Sars.

S. elongatum, G. O. Sars, 1883.
S. elongatum, G. O. Sars, 1885.
S. elongatum, Hansen, 1905.
S. elongatum, Holt and Tattersall, 1906.

Stations. C, 1200—0 fms., one, 10 mm.; c, 300 fms., two, 8·5 and 9 mm.; k, 300 fms., one, 10 mm.; s, 250—0 fms., one, 10 mm.

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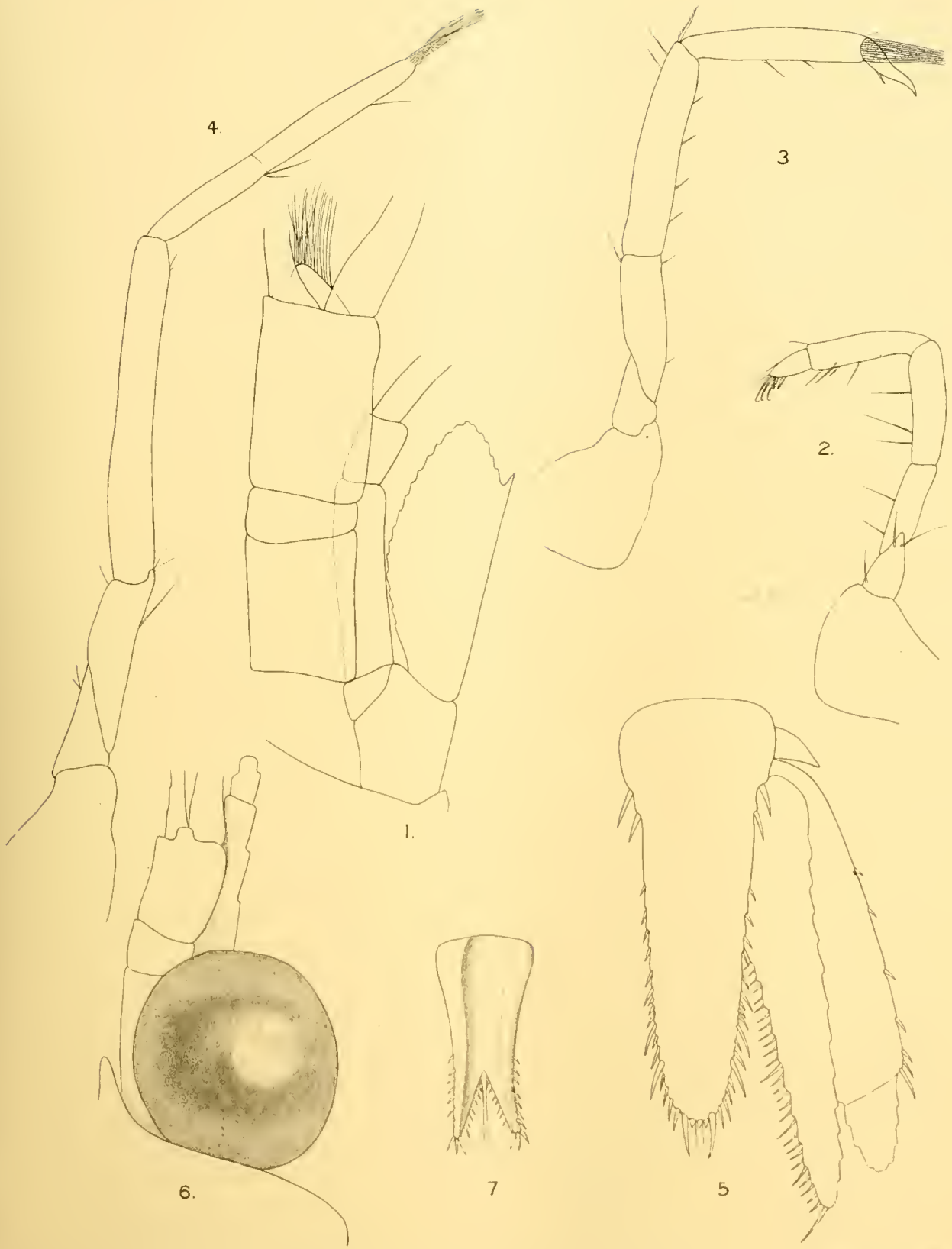
EXPLANATION OF PLATES 6 AND 7.

Plate 6.

Fig. 1. *Hemisiriella gardineri*, Tattersall, male, antennular peduncle, antennal scale and peduncle. × 68.
Fig. 2. Same, endopod of the second thoracic limb. × 68.
Fig. 3. Same, endopod of the third thoracic limb. × 68.
Fig. 4. Same, endopod of the fourth thoracic limb. × 68.
Fig. 5. Same, telson and uropods. × 68.
Fig. 6. "*Mysis*" *quadrispinosa*, Illig, female, dorsal view of anterior end. × 68.
Fig. 7. Same, telson. × 21.

Plate 7.

Fig. 1. *Anisomysis bifurcata*, Tattersall, male, dorsal view of anterior end. × 68.
Fig. 2. Same, antennal scale and peduncle. × 68.
Fig. 3. Same, endopod of the second thoracic limb. × 68.
Fig. 4. Same, endopod of the third thoracic limb. × 68.
Fig. 5. Same, fourth pleopod. × 68.
Fig. 6. Same, telson. × 68.
Fig. 7. *Thysanopoda pectinata*, Ortmann, copulatory organs on first pleopod of male. × 21.
Fig. 8. *Thysanopoda monacantha*, Ortmann, copulatory organs on first pleopod of male. × 68.



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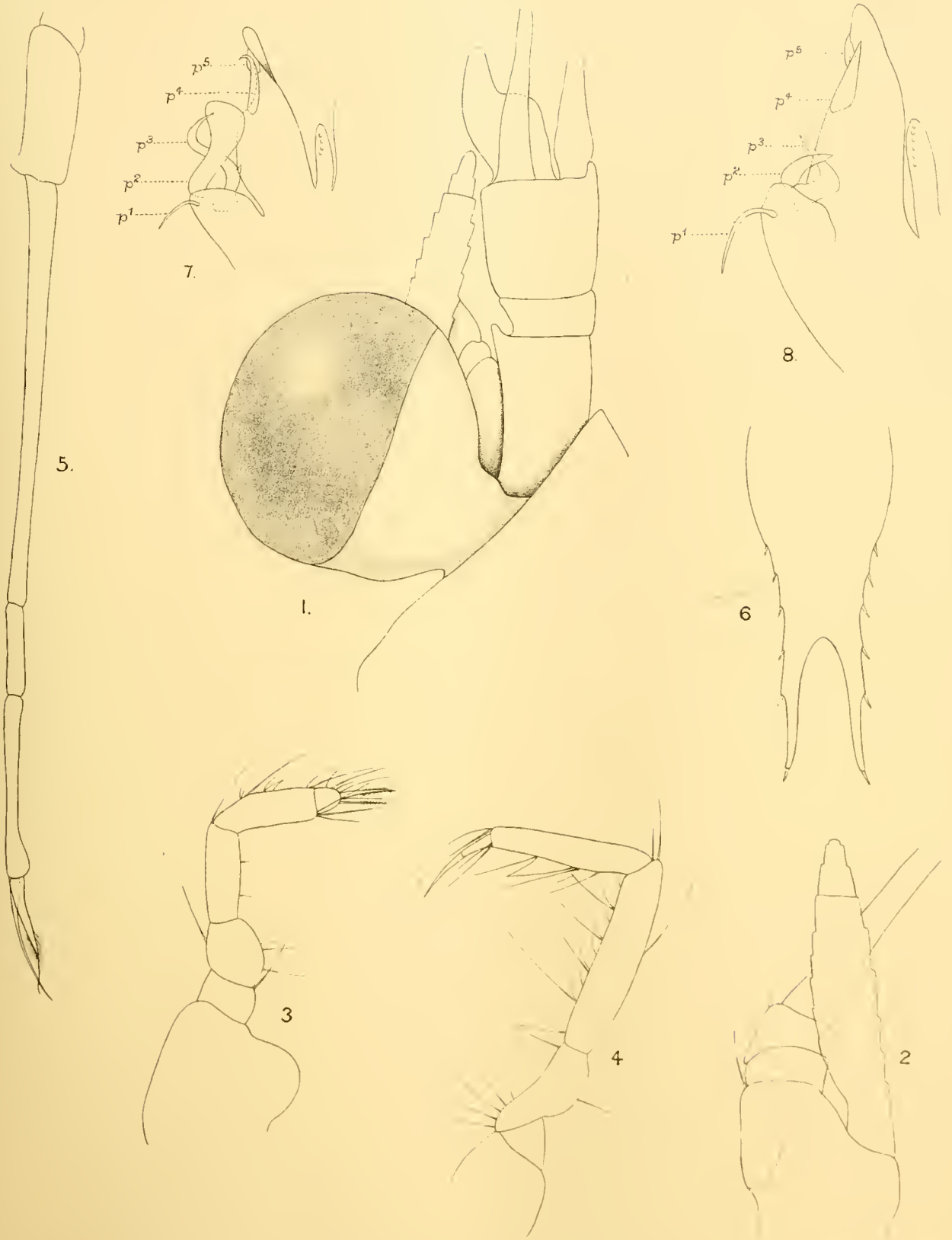
E. Wilson, Cambridge

CRUSTACEA FROM THE INDIAN OCEAN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No. X.—THE MARINE POLYZOA OF THE INDIAN OCEAN, FROM H.M.S. *SEALARK*.

By Laura Roscoe Thornely.

Plate 8.

Read 2nd March, 1911.

There are 106 species and 12 varieties in this collection, of which nine species and five varieties are new to science, namely :—

Bugula neritina var. *rubra*.
„ „ „ *tenuata*.
„ „ „ *ramosa*.
Membraniporella magnifica.
Cribrilina reticulata.
Bifaxaria vagans.
Retepora monilifera var.
Lepralia crassa.
„ *marginata*.
„ *bicornis*.
Smittia glomerata
„ *ornata*
Phylatella galeata
Mucronella ellerii var. *multi-aviculariata*.

Forty of these species have been reported by myself from Ceylon*, and some of the same with three besides from the Bay of Bengal†. Mr Waters has reported 25 species and one variety from the Red Sea‡, which are in the *Sealark* collection, 20 of these being also in the Ceylon and Indian collections. This leaves 58 species and 11 varieties in the present list that are new records for these Eastern seas, namely :—

Ætea recta Hincks.
Synnotum aviculare (Pieper).
Catenaria lafontii (Aud.).
„ *otophora* Kirk.
Vitaticella crystallina (Wyv. Th.).
„ *buskii* (Wyv. Th.).
Scrupocellaria scrupea Busk var. *dongolensis* Waters.
„ *pilosa* Busk.
„ *obtecta* Haswell.
„ *frondis* Kirk.
„ *macandrei* Busk.
Caberea boryi (Aud.).
Canda retiformis Pourtalés.
Pollaplœcium gilbertensis Maplestone.
Bugula dentata Lamx.
„ *gracilis* Busk.
„ *neritina* (Linn.).
„ „ „ var. *minima* Waters.
„ „ „ „ *rubra* nov.
„ „ „ „ *tenuata* nov.
„ „ „ „ *ramosa* nov.
Beania intermedia (Hincks).
Membranipora normaniana (D'Orb.).
„ *radicifera* Hincks, var. *intermedia* Kirkp.
„ *pedunculata* Manzoni.
„ *variegata* Hincks.
„ *savartii* (Aud.).
„ *granulifera* Hincks.

* Herdman's Ceylon Pearl Fisheries Report—Supplementary Rep. xxvi, 1905.

† Report on the Marine Polyzoa in the Collection of the Indian Museum, Records of the Indian Museum, vol. i, pt. 3, No. 13, 1907.

‡ Journ. Linnean Society, London, Zool., vol. xxx, Oct. 1907 ; vol. xxxi, March 1909.

Onychocella velata (Hincks).
Micropora coriacea (Esper.).
„ *brevissima* Waters.
„ *bouchardii* (Aud.).
Membraniporella magnifica, n. sp.
Cribrilina radiata (Moll.).
„ „ var. *flabellifera* Kirk.
„ *figularis* (Johnston).
„ *reticulata*, n. sp.
Steganoporella magnilabris (Busk).
Thalamoporella rozieri Aud.
Bifaxaria vagans, n. sp.
Salicornaria tenuirostris Busk.
Tubucellaria cereoides (Ellis and Sol.).
„ „ var. *chuakensis* Waters.
„ *zanzibarensis* Waters.
Microporella ciliata (Pallas)
„ *hyadesi* (Jullien).
„ *diadema* MacG.
„ *renipuncta* MacG.
„ *malusii* (Aud.).
„ *magnirostris* (MacG.).
Lagenipora tuberculata MacG.
„ *spinulosa* Hincks.
Retepora monilifera MacG.
„ *porcellana* MacG.
„ *denticulata* Busk.
Schizoporella cecilii (Aud.).
„ *triangula* Hincks.
„ *spongites* (Smitt).
„ *viridis* Thornely.
„ *nivea* Busk.
„ *biaperta* Michelin.
„ *circinnata* (MacG.)
„ *armata* Hincks.
„ *lata* MacG.
„ *subsinuata* Hincks.
„ *dutertrei* (Aud.) var. *pes-anseris* (Smitt).
„ *hyndmani* (Johnston).
Gemellipora glabra, form *striatula* Smitt.
„ *lata* Smitt.
Rhyncozoon bispinosa (Johnston).
„ *incisor* Thornely.
Lepralia turrita Smitt.
„ *poissonii* Aud.
Lepralia cleidostoma Smitt.
„ *feegeensis* Busk.
„ *crassa*, n. sp.
„ *marginata*, n. sp.
„ *depressa* Busk.
„ *bicornis*, n. sp.
Porella concinna var. *gracilis* Hincks.
„ *nitidissima* Hincks.
Smittia signata Waters.
„ *landsborovii* Johnston.
„ *marmorea* Hincks.
„ *tubula* Kirk.
„ *affinis* Hincks.
„ *glomerata*, n. sp.
„ *trispinosa* Johnston.
„ *nitida* Verrill.
„ *ornata*, n. sp.
„ *murarmata* Kirk.
Phylactella columnaris Kirk.
„ *galeata*, n. sp.
Mucronella coccinea, Abild.
„ *porelliformis* Kirk.
„ *delicatula* Busk.
„ *ellerii* MacG. var. *multi-avicularíata* nov.
Adeonella subsulcata (Smitt).
Cellepora megasoma MacG.
„ *longirostris* MacG.
„ *costata* MacG.
„ *vagans* Busk.
Holoporella tridenticulata (Busk).
„ *albirostris* (Smitt).
„ *mamillata* (Busk).
„ *foliata* MacG.
„ *simplex* (MacG.).
„ *discoidea* (Busk).
Crisia conferta Busk.
Idmonea atlantica Forbes.
„ *milneana* D'Orb.
„ *serpens* (Linn.).
„ *radians* (Lamk.).
Hornera robusta MacG.
Entalophora proboscidea (M. Edwards).
Lichenopora holdsworthii (Busk).
Cylindrœcium giganteum (Busk).
Farella atlantica Busk.

SYSTEMATIC LIST.

Cheilostomata.

1. *Ætea recta*, Hincks, Ann. Mag. Nat. Hist., ser. 3, ix, 1862, p. 25.

Cargados, 28 fath.; Amirante, 35 fath.

2. *Synnotum aviculare* (Pieper).

Gemellaria avicularis Pieper, Jahresbericht Westfalischen Provincialvereins, ix; Hincks, Ann. Mag. Nat. Hist., ser. 5, xvii, p. 257.

Amirante, 29 fath.

3. *Catenaria lafontii* (Aud. and Sav.), Descrip. de l'Égypte, Hist. Nat., i, p. 242.

Cargados.

4. *Catenaria otophora*, Kirkpatrick, Ann. Mag. Nat. Hist., ser. 6, v, 1890, p. 17.

Salomon.

5. *Vitaticella crystallina* (Wyville Thomson).

Catenicella crystallina, Wyv. Th., Dub. Nat. Hist. Rev., April 1858, p. 7; MacG., Prod. Zool. Vict. Dec. iii, p. 25.

One small broken piece only.

Amirante, 23 fath.

6. *Vitaticella buskii* (Wyville Thomson).

Catenicella buskii, Wyv. Th., Dub. Nat. Hist. Rev., p. 140, April 1858; MacG., Prod. Zool. Vict. Dec. iii, p. 24.

There is only one fragment of this delicate species. The vittæ reach the full length of the zœcium, the two lateral processes, bearing avicularia, are small and of even height, the surface is finely punctured in front and the orifice has a slightly projecting rounded lower lip. Oœcia are absent.

Amirante, 23 fath.

7. *Scrupocellaria scrupea*, Busk, var. *dongolensis*, Waters, Journ. Linn. Soc. London, Zool., xxxi, 1909, p. 134.

Amirante, 34 fath.

8. *Scrupocellaria pilosa*, Busk, Report Challenger Exp., x, pt. xxx, p. 24.

The scutum of these specimens is not so fully developed as in Busk's figure, Pl. XI, fig. 7, but is of the same form with the lamina more developed above than below the peduncle. One of the five or six spines, usually the outermost, is thicker than the rest, the flagellum of the vibraculum is of considerable length, the lateral avicularia are small, radical fibres are toothed and spring from the side of the vibraculum.

Cargados, 28 fath.; Saya de Malha, 125 fath.; fragmentary pieces only.

9. *Scrupocellaria obtecta*, Haswell, Proc. Linn. Soc. New South Wales, v, pt. i, p. 37.

There are some colonies of a Scrupocellaria, having the large figured scutum, the small lateral and anterior avicularia and the perforated oœcia of Hincks'* and MacGillivray's† specimens of *S. obtecta*. They have here, sometimes four, but usually two spines, the lower pair usually stout and forked. Hincks speaks of two, simple spines, and MacGillivray of only one. There are none of the occasional large, lateral avicularia of Hincks' specimens, the median avicularium varies a little in size and has often a serrated beak, the vibraculum is like Hincks' and is longer than in MacGillivray's specimens. The forked spines, figured scutum and perforated oœcium the present specimens have in common with *S. cervicornis*, but they are larger, more robust and less glassy than that species.

Amirante, 29 fath.; Cargados, 30 fath.; Providence, 50—78 fath.

10. *Scrupocellaria frondis*, Kirkpatrick, Journ. Linn. Soc. Zool., xx, 1890, p. 504.

The spines, median avicularia and oœcia correspond with those of this species, the characteristic antler-like spine being a marked feature. There are, however, lateral avicularia present here and the scutum is different, being spade-shaped, sometimes much elongated, so as to make a curved band right over the front of the aperture, extending even beyond it, and covered by a tree-like tracery. Median avicularia are small and have pointed mandibles directed downwards and outwards. There is a toothed radical fibre. The one small specimen is of a delicate vitreous nature, with some resemblance to *S. cervicornis*.

Amirante, 29 fath.

11. *Scrupocellaria macandrei*, Busk, Brit. Mus. Cat., i, p. 24.

These specimens have the broad granular margin to the aperture, the large lateral avicularia and the raised median avicularia and the 4—5 spines of Busk's‡ species. The eminence carrying the median avicularium is tall and leans from the base of one zoœcium to about the base of the peduncle of the scutum of the opposite zoœcium. The oœcium is smooth, with an oval, flattened area on the front wall in some cases. The vibracular cell is wedge-shaped, reaching right across the back of the zoœcium, the vibraculum is smooth, about twice the length of the groove it rests in; there are two vibracula in each fork of a branch. Colonies are slender, of a yellowish colour.

Providence, 50—78 fath.; Amirante, 29 fath.; Farquhar, reef; Cargados, 30 fath.; Seychelles, 34 fath.

12. *Caberea boryi* (Aud.).

Crisia boryi, Aud., Descrip. de l'Égypte, Nat. Hist., i, p. 72; Busk, Brit. Mus. Cat., i, p. 38.

The one small colony of this form has the scutum more developed below its peduncle than above, the upper portion often extending across and uniting with the side of the zoœcium as in Busk's variety *zelanica*, pl. 16, figs. 4—5. There is not the stout spine near the peduncle of the scutum, as is usual in this variety, the lower zoœcia on a branch having none and the upper four slender spines only, if any. Avicularia as in *C. rostrata*,

* Ann. Mag. Nat. Hist., ser. 5, xi, p. 193. † MacG., Prod. Zool. Vict. Dec. xiii, p. 102.

‡ Rep. Challenger Exp., x, pt. xxx, p. 23.

Busk*, are small usually, but replaced here and there by a large one, raised on a prominent rostrum and having a triangular mandible, the largest of these being situated below the fork of a branch. Besides these there are large spatulate avicularia on the sides of the branches near a fork, seen best from behind. Setæ are long and serrated. Oœcia have an arched ridge across the front and are so numerous that the zoœcia are partly concealed.

Cargados, 30 fath.

13. *Canda retiformis*, Pourtalés, Bull. Mus. Comp. Zool., Camb. Mass., p. 110.

These specimens have the peculiarly long, pointed upper half to the fornix described by Miss Phillips†. There are sometimes two spines instead of one on the inner margin of the zoœcium. Where avicularia are present they are situated above the oœcia. Vibracula are not so long as figured by Smitt‡. Oœcia have a semicircular area in front. There is abundant material of this species.

Amirante, 23—29 fath.; Saya de Malha, 55 fath.; Seychelles, 39 fath.; Cargados, 30 fath.

14. *Pollaplœcium gilbertensis*, Maplestone, Proc. Roy. Soc. Vict. n.s. p. 417, 1909.

Cargados, 30 fath.; Providence, 50—78 fath.; Saya de Malha, 150 fath.; Amirante, 23 fath.

15. *Bugula dentata*, Lamx.

Acamarchis dentata, Lamx, Exp. Méth. p. 6; Busk, Brit. Mus. Cat., i, p. 46.

This species answers to Busk's description of *B. dentata* in all respects but that the oœcia are not blue. They are set a little to one side, owing, apparently, to the three spines occupying so much space on the outer margin of the zoœcium. The spines are jointed and are often broken off at the joints.

Amirante, 29—34 fath.

16. *Bugula gracilis*, Busk, Quart. Journ. Micro. Sci., vi, p. 125.

Amirante, 29 fath.

17. *Bugula neritina* (Linn.). Waters, Journ. Linn. Soc. London, Zool., xxxi, 1909, p. 135.

There are several broken pieces of this species with avicularia present.

Providence, 50—78 fath.; Amirante, 34 fath.; Cargados.

18. *Bugula neritina*, var. *minima*, Waters, Journ. Linn. Soc. London, Zool., xxxi, 1909, p. 136.

There are colonies $\frac{1}{2}$ in. in height growing on seaweed.

Cargados, reef; Providence, 50—78 fath.

19. *Bugula neritina*, var. *rubra*, nov. (Pl. 8, fig. 1). This variety has the shape of zoœcium, with pointed outer angle and the sideways position of the oœcium of *B. neritina*. The colonies are reddish brown in colour, robust and about $1\frac{1}{2}$ in. in height. The whole

* Rep. Challenger Exp., x, pt. xxx, p. 28. † Willey's Zool. Results, p. 439, 1900.
‡ Flor. Bry., p. 16, 1873.

front wall of the zoœcium is occupied by the aperture, which is wide and open. Avicularia are situated a little way up the margin of the aperture on long, stout peduncles, they have a powerful long, curved beak with a sharp tooth midway on the lower edge. This and the position of the oœcium make a marked difference in this species from *B. robusta*, MacGillivray*, which it somewhat resembles.

Amirante, 34 fath. ; Providence, 50 fath.

20. *Bugula neritina*, var. *tenuata*, nov. (Plate **8**, fig. 2).

This variety has the same shape of zoœcium as the last, with pointed outer angle, no spines, and has the oœcium turned sideways. The colonies are about 2 inches in height where they are broken off, they are thin and straggling, of a yellowish grey colour. Zoœcia are almost uniserial in their arrangement, the aperture occupies about $\frac{2}{3}$ of the front wall, the sides of the zoœcium are curved inwards, narrowing the aperture. Avicularia are borne on long, slender peduncles and are situated below the aperture; they are globular with short parrot-like beaks.

Cargados, 28 fath.

21. *Bugula neritina*, var. *ramosa*, nov. (Pl. **8**, fig. 3).

This variety is of a red colour. Branches are given off at right angles from the sides of zoœcia, rounded and narrowed towards their bases and with a joint near there. Zoœcia are uniserial on the upper portion of the colony, turning alternately to either side, the lower portion attached and lying against the back of the zoœcium below, the upper portion free, its front wall entirely occupied by the aperture, which is covered by a reddish membrane. The sides of the zoœcium curve inwards considerably, and a few perforations are to be seen along their margins. Avicularia are rarely to be seen, they are small, on fairly long peduncles, and situated below the aperture as in the last species. The oœcium has a pitted surface.

There are merely fragments of this species growing among *Canda retiformis*. It resembles *B. uniserialis*, Hincks†, but is much larger, red, and branches differently.

Amirante, 23 fath.

22. *Beania intermedia* (Hincks).

Diachoris intermedia, Busk, Ann. Mag. Nat. Hist., ser. 5, viii, 1881, p. 133.

Indian Ocean.

23. *Membranipora normaniana* (d'Orb.). Waters, Journ. Linn. Soc. London, Zool., xxvi, p. 670.

There are numerous representatives of this species encasing stems of Hydroids and other objects.

Providence, 50—78 fath. ; Amirante, 32 fath.

24. *Membranipora radicifera*, Hincks, var. *intermedia*, Kirkpatrick, Proc. Roy. Dub. Soc., vi, p. 615.

Salomon, 75 fath.

* MacG., Prod. Zool. Vict. Dec. viii, p. 29. † Ann. Mag. Nat. Hist., ser. 5, xiii, 1884, p. 367.

25. *Membranipora pedunculata*, Manzoni, Bry. fr. Ital. 4ª cont. sitzb. d. k. akad. d. Wissensch., lxi, p. 7 ; Hincks, Ann. Mag. Nat. Hist., ser. 5, vi, 1880, p. 377.

There are a few zoœcia with oœcia attached growing on a small bit of shell and corresponding with Hincks' description of this species. There are mixed up with this colony some zoœcia with two spines at the top and two avicularia pointing upwards on either side, below the spines. These zoœcia, which differ entirely from those I have referred to *M. pedunculata*, must belong to another colony, but are growing as one with *M. pedunculata* on the shell.

Saya de Malha, 125 fath.

26. *Membranipora variegata*, Hincks, Ann. Mag. Nat. Hist., ser. 5, viii, 1881, p. 131.

The spines are, as Hincks describes, dark at their bases, the upper four standing upright and thicker, while the six or seven lower ones lie across the zoœcium and are more slender. None have the tendency to become clavate. Oœcia, not seen by Hincks, are smooth with an arch across the centre as in *M. lineata*, Linn., which is either pointed or square, with sometimes a very small avicularium directed upwards in the centre above it.

Providence, 50—78 fath.

27. *Membranipora savartii* (Aud.). Waters, Ann. Mag. Nat. Hist., ser. 5, xx, 1887, p. 181.

There is a small but good colony of this form, brownish in colour owing to the membranous covering, which is well preserved. There are calcareous nodules at the bases of the zoœcia, one or two, according to the width of the zoœcium, and there are denticles on the upper margin of the calcareous portion which incline backwards into the orifice and are jagged at their edges.

Providence, 50—78 fath.

28. *Membranipora granulifera*, Hincks, Ann. Mag. Nat. Hist., ser. 5, vi, 1880, p. 72.

Providence, 50—78 fath. ; Amirante, 25—80 fath.

29. *Onychocella velata* (Hincks), Ann. Mag. Nat. Hist., ser. 5, viii, 1881, p. 130.

The one specimen of this form in the collection is old and the colour faded to a very pale brown. The crenulated margin of the zoœcium is broad. There is only one broken avicularium present, but enough to show the right position and shape. There are several oœcia.

Saya de Malha, 29 fath., growing on a piece of old shell.

30. *Micropora coriacea* (Esper.). Hincks, Brit. Mar. Pol., 1880, p. 174.

This is Hincks' variety which has no nodular enlargements of the margin below the orifice but unlike Hincks' variety they have avicularia as on his ordinary species. No oœcia are present.

Providence, 50—78 fath. ; Saya de Malha, 125 fath.

31. *Micropora brevissima*, Waters, Expéd. Antarct. Belge, 1904, Bryozoa, p. 40.

Providence, 50—78 fath. ; Saya de Malha, 125 fath. ; Salomon, 75 fath.

32. *Micropora bouchardii* (Aud.) (Pl. 8, fig. 4).

Flustra bouchardii, Aud., Descrip. de l'Égypte, Hist. Nat. i, Pl. 9, fig. 11.

This striking species, of which there is only one very small colony, growing on a coral, resembles Savigny's figure, Pl. 9, fig. 11, described by Audouin as *Flustra bouchardii*. The zoarium is incrusting, covered by a thin yellowish membrane. Zoœcia large, prominent, perforated over the entire front wall. Orifice arched above, the lower margin slightly convex, surrounded by six thick spines, black at their bases. A pore on either side of a central keel below the orifice. No oœcia.

Providence, 50—78 fath.

33. *Membraniporella magnifica*, n. sp. (Pl. 8, fig. 5).

Zoarium incrusting in large, yellow patches. Zoœcia fairly close together, large, with from five to six prominent ribs on either side, which fork before uniting in the centre, forming a double irregular row of holes there, an erect spine-like process on each rib near its outer edge. Orifice large, spreading towards the base, a spine on either side and several flat, forked spines above. Oœcia flat, peaked above, or sometimes with three peaks, the middle one the highest, they appear to be membranous ; the flattened spines lying behind, and showing above them.

Cargados, 30 fath.

There is a large dried colony of this beautiful species, measuring about two inches across, unfortunately much broken. It has some resemblance to (?) *Membraniporella aragoi* (Aud.).

34. *Cribrilina radiata* (Moll). Busk, Report Challenger Exp., pt. xxx, p. 131.

Providence. 125 fath. ; Saya de Malha, 29 fath. ; Salomon, 75 fath.

35. *Cribrilina radiata*, var. *flabellifera*, Kirkpatrick, Ann. Mag. Nat. Hist., ser. 6, i, 1888, p. 75.

The avicularia here have much wider wings than are figured by Kirkpatrick.

Providence, 50—78 fath.

36. *Cribrilina figularis* (Johnston). Hincks, Brit. Mar. Pol., p. 196.

There is one colony of this species without avicularia, growing on a piece of coral.

Salomon, 60—120 fath.

37. *Cribrilina reticulata*, n. sp. (Pl. 8, fig. 6).

Zoarium composed of zoœcia widely separated by a reticulate, calcareous expansion, giving off erect processes here and there, which bear avicularia on their summits. Zoœcia small and neat with from 9—11 finely perforated furrows on either side of a central line,

the ridge below the uppermost furrow rather more raised than the rest, forming a screen below the orifice. Orifice with two spines near together, above, which bend forward, and two lateral broader spines which unite in the centre, making an arch over the orifice. Oœcia small, rounded and smooth.

Providence, 50—78 fath.

There is only one small colony of this species, growing with many other species on a small bit of coral. It is smaller and more delicate than *C. annulata.*

38. *Steganoporella magnilabris* (Busk).

Membranipora magnilabris Busk, Brit. Mus. Cat., ii., p. 62.

Amirante, 20—25 fath.

39. *Thalamoporella rozieri,* Aud.

Steganoporella rozieri, Hincks, Ann. Mag. Nat. Hist., ser. 5, vi, 1880, p. 379.

Some colonies are growing in the form of hollow tubes, one is incrusting a stick and one a coral. They have the oœcia of Hincks' form *indica* and the avicularia both of that form and of form *falcifera.*

Amirante, 20—35 fath.; Farquhar atoll; Cargados, 30 fath.; Coin, Peros.

40. *Bifaxaria vagans,* n. sp. (Pl. 8, fig. 7).

Zoarium erect, calcareous, of a dull brown colour, with lighter coloured tips, forking at irregular intervals; branches not all in one plane, with corneous joints near their bases. Zoœcia elongate, perforated, distinctly divided from each other. Orifice with raised peristome enclosing a small pointed avicularium, which is directed upwards from a central position and leaves a sinus in the margin when absent. There are no oœcia.

Seychelles, 34—39 fath.; Amirante, 34 fath.

There is a good quantity of this species, which has the appearance of a sertularian hydroid to the naked eye. It is placed provisionally under the genus *Bifaxaria,* being closely allied to *B. reticulata.*

41. *Salicornaria tenuirostris,* Busk, Brit. Mus. Cat., i, p. 17.

These specimens are about 2 inches in height, their avicularia are not so attenuated as in Smitt's* figure and in some colonies are very much shorter than in others, where the mandible is almost triangular, leaning forward. There are several colonies in the collection.

Seychelles, 39 fath.; Amirante, 32 fath.; Cargados, 28—30 fath.; Providence, 50 fath.

42. *Tubucellaria cereoides* (Ellis and Solander). MacGillivray, Prod. Zool. Vict. Dec. ii, p. 18.

Cargados, 28 fath.; Saya de Malha, 29—145 fath.

* Floridan Bryozoa, p. 4, Pl. I, fig. 57.

43. *Tubucellaria cereoides*, var. *chuakensis*, Waters, Journ. Linn. Soc. London, Zool., xxx, 1909, p. 130.

Providence, 50—78 fath.

44. *Tubucellaria zanzibarensis*, Waters, Journ. Linn. Soc. London, Zool., xxx, p. 131.

Saya de Malha, 145—150 fath.; Farquhar, reef; Cargados, 28 fath.

45. *Microporella ciliata* (Pallas).

Eschara ciliata, Pallas. Hincks, Brit. Mar. Pol., p. 206.

Providence, 50—78 fath.; Cargados; Saya de Malha, 125 fath.

46. *Microporella hyadesi* (Jullien).

Fenestrula hyadesi, Jullien, Mission Scientific du Cap Horn, p. 44; Waters, Journ. Linn. Soc. London, Zool., xxix, 1909, p. 237.

There are no foliaceous expansions of the zoarium among the specimens in this collection which are all incrusting; the zoœcia are perforated throughout, the margins of the orifices are smooth below, with three spines above, usually; the avicularian mandible has large wings.

Providence, 50—78 fath.; Saya de Malha, 47 fath.

47. *Microporella diadema*, MacGillivray.

Lepralia diadema, MacGillivray, Trans. Roy. Soc. Vict., ix, p. 8, 1868.

There are, unfortunately, none of the peculiarly marked oœcia present in this colony.

Providence, 50—78 fath.

48. *Microporella renipuncta*, MacGillivray, Trans. Roy. Soc. Vict., xix, p. 130, 1882.

There is a very small colony of this form without avicularia or oœcia, but recognisable from its distinctive pore.

Providence, 50—78 fath.

49. *Microporella malusii* (Aud.) (Pl. 8, fig. 8). Hincks, Brit. Mar. Pol., p. 211.

Zoœcia very large, about twice the size of the usual British species, regularly marked all over by opaque, white spots, an oval or kidney-shaped pore not far below the orifice. No avicularia. Oœcia smooth, resting on a broad ridge at the back.

Saya de Malha, 125 fath. The only colony of this kind is old and worn in parts and is adhering to a piece of old shell.

50. *Microporella magnirostris* (MacGillivray), Trans. Roy. Soc. Vict., xix, p. 134, 1882.

Amirante, 35 fath.

51. *Lagenipora tuberculata*, MacGillivray, Trans. Roy. Soc. Vict., xix, p. 132, 1882.

Providence, 50—78 fath.

52. *Lagenipora spinulosa*, Hincks, Ann. Mag. Nat. Hist., ser. 5, xiii, 1884, p. 210.

Amirante, 38 fath. Small, erect colonies, growing on *Nellia oculata*.

53. *Retepora monilifera*, MacGillivray, var. nov., Trans. Phil. Inst. Vict., iv, pt. 2, p. 168; MacG., Prod. Zool. Vict. Dec. x, p. 19.

The representatives of this species in the present collection do not correspond exactly with any of MacGillivray's various forms, but have usually the following characters: a central pore, more or less complete; the edge of the lower margin of the orifice sometimes crenulated; an avicularium to one side of the pore and close up to the margin, not always present, sometimes another below this one, and there are long pointed avicularia situated at the bases of some of the fenestræ, the mandible when at rest lying between the two points of the beak. There are no avicularia on the dorsal surface. Oœcia have a long vertical band and a shorter horizontal one, an avicularium on one or both sides of the vertical band. These characters are more or less constant on the many colonies and fragments of colonies in the collection.

Seychelles, 39 fath.; Amirante, 29—30 fath.; Cargados, 28 fath.; Providence, 50 fath.; Saya de Malha, 47 fath.; Diego Garcia, 12 fath.

54. *Retepora porcellana*, MacGillivray, Trans. Roy. Soc. Vict., ix, p. 140, 1868; MacG., Prod. Zool. Vict. Dec. x, p. 15.

Seychelles, 39 fath.; Amirante, 25—30 fath.; Saya de Malha, 150 fath.; Cargados, 28 fath.

55. *Retepora denticulata*, Busk, Report Challenger Exp., x, pt. xxx, p. 109.

There is a colony an inch in height. There are no barren trabeculæ, the zoarium is dichotomously branched, the tips of the branches bending over and uniting. The zoœcium has a flat, roughened surface, a tubular notched peristome, much indented round the margin, one side often higher than the other, an eminence on the front of the zoœcium bearing an avicularium with a two-pointed beak and a mandible ending squarely, the angles more or less pointed. There are larger avicularia at the forks of branches, having wide, three-pointed mandibles, and there is an occasional small elongated avicularium on the dorsal surface. Older colonies have the orifice much sunk, the rostrum, bearing an avicularium, being level with the surface of the zoœcium. There is a small broken piece of a colony from Seychelles, which may not be the same species. It has more slender branches, a small avicularium just below the lower margin of the orifice instead of the large frontal one, while the large avicularium at the fork of the branches is divided into four fingers. There are no oœcia on this species.

Amirante, 15—35 fath.; Seychelles, 34 fath.

56. *Schizoporella cecilii* (Aud.). Hincks, Brit. Mar. Pol., p. 269.

Providence, 50—78 fath.

57. *Schizoporella triangula*, Hincks, Ann. Mag. Nat. Hist., ser. 5, viii, 1881, p. 12.

Providence, 50—78 fath.

58. *Schizoporella spongites* (Smitt).

Hippothoa spongitis, Smitt, Floridan Bryozoa, 1872, p. 42.

Cargados, 30 fath.; Amirante, 30 fath. Large colonies.

59. *Schizoporella viridis*, Thornely, in Herdman's Report on Pearl Oyster Fisheries of the Gulf of Manaar, 1905, xxvi, p. 116; Waters, Journ. Linn. Soc. London, ser. 2, Zool., xxxi, p. 147, 1909.

There are large thick colonies of this species and also thin layers growing on a seaweed. Young zoœcia always have one large avicularium, above the orifice, only.

Egmont, reef; Providence, 70 fath.; Coetivy.

60. *Schizoporella nivea*, Busk, Report Challenger Exp., x, pt. xxx, p. 163.

There are some small colonies corresponding to the description of this form, but that they are loosely adherent instead of entirely free growing, and the lateral processes are replaced by avicularia.

Amirante, 29 fath.; Seychelles, 39 fath.; Providence, 50—78 fath.

61. *Schizoporella biaperta*, Michelin. Hincks, Brit. Mar. Pol., 1880, p. 255.

There are none of the large avicularia borne on mamillæ as described by Hincks for his species. The margin of the orifice is thickened below, and a keel-like ridge runs downwards from it. The oœcia have an arched ridge across the front of them. The colony is glistening white.

Providence, 50—78 fath.

62. *Schizoporella circinnata* (MacGillivray).

Lepralia circinnata, MacGillivray, Trans. Roy. Soc. Vict., xix, p. 134; Hincks, Ann. Mag. Nat. Hist., ser. 5, xv, 1885, p. 253.

The one good colony of this species has its younger zoœcia smooth, with a single row of punctures round the margin and those that are older roughened and punctured all over the surface; oœcia resemble the zoœcia. The umbo on these colonies is usually central, below the orifice, but sometimes there are two, which have small rounded avicularia directed outwards.

Cargados, 30 fath.

63. *Schizoporella armata*, Hincks, Brit. Mar. Pol., p. 258.

There are from 6—8 spines on these specimens; they are much broken but appear to vary from being slender to thick. The species *S. scintillans*, Hincks*, unless too small, seems to be identical with this species.

Saya de Malha, 47 fath.; Providence, 125 fath.

64. *Schizoporella lata*, MacGillivray, Trans. Roy. Soc. Vict., xix, p. 132; MacG., Prod. Zool. Vict. Dec. xiv, p. 145.

These specimens do not quite correspond with MacGillivray's description. The sinus

* Ann. Mag. Nat. Hist., ser. 5, xv, 1885, p. 143.

appears to be narrower and more rounded below, the avicularium has a small, pointed mandible as in fig. 2, pl. 138, and above it there is a swollen semi-lunar area. The zoœcia are about half the size of *S. triangula.*

Saya de Malha, 150 fath.

65. *Schizoporella subsinuata,* Hincks, Ann. Mag. Nat. Hist., ser. 5, xiv, 1884, p. 280.

There is a small, old colony adhering to a Cellepora, it resembles MacGillivray's* species in having avicularia, but these are smaller than his and turn various ways, usually there is a pair, one on either side of the orifice high up, sometimes a double pair; all are raised on small bosses and slightly pointed.

Saya de Malha.

66. *Schizoporella dutertrei* (Aud.) var. *pes-anseris* (Smitt).

Hippothoa pes-anseris, Smitt, Floridan Bryozoa, 1872, p. 43.

Providence, 50—78 fath.

67. *Schizoporella hyndmani* (Johnston). Hincks, Brit. Mar. Pol., p. 281.

The peristome of this species is very much raised, concealing the primary orifice, it is elliptical, not tubular, and the upper and lower margins, being more developed than the lateral, gives a two-lipped appearance. The oœcium is situated behind this and does not quite reach to the top. The mandibles of the avicularia are not very long. The surface of the zoœcium is smooth, but there are faintly seen perforations on some. The front wall is raised at the sides and flattened centrally.

Providence, 50—78 fath.

68. *Gemellipora glabra,* form *striatula,* Smitt, Floridan Bryozoa, p. 37, 1872.

Amirante, 22—85 fath.; Saya de Malha, 29—125 fath.

69. *Gemellipora lata,* Smitt, Floridan Bryozoa, p. 36.

Saya de Malha, 29 fath.

70. *Rhyncozoon bispinosa* (Johnston).

Rhynchopora bispinosa, Hincks, Brit. Mar. Pol., p. 385.

There is a small, pinkish white colony of this species. The primary orifice is very slightly sinuated, the front wall covered by small, rounded avicularia, one of them larger and longer, having a blunt end and lying below the orifice, crosswise. There are several rounded spine-like processes round the margin, besides the umbo, which carries an avicularium on its side.

Saya de Malha, 29 fath.

71. *Rhyncozoon incisor,* Thornely, Herdman's Rep. on Pearl Oyster Fisheries, 1905, p. 118.

* Prod. Zool. Vict. Dec. xiv, p. 147.

The uncinnate process is much less developed than in the Manaar specimens and the avicularium is higher up inside the tubular orifice. There is only one small colony.

Providence, 50—78 fath.

72. *Lepralia turrita*, Smitt, Floridan Bryozoa, p. 65.

Amirante, 29 fath.; Cargados, 30 fath.

73. *Lepralia poissonii*, Aud. Hincks, Ann. Mag. Nat. Hist., ser. 5, xv, 1885, p. 256.

Providence, 50—78 fath.

74. *Lepralia cleidostoma*, Smitt, Floridan Bryozoa, p. 62.

The species in this collection has zoœcia with thickly calcareous front walls glistening and granular, having 2—3 spines on marginal cells and a sharp pointed avicularium, directed upwards, on either side of the orifice. Oœcia have the same calcareous surface as the zoœcia and are cucullate.

Amirante, 35 fath.

75. *Lepralia feegeensis*, Busk, Report Challenger Exp., x, pt. xxx, p. 144.

Cargados. A good colony growing on a Cellepora.

76. *Lepralia crassa*, n. sp. (Pl. 8, fig. 9).

Zoarium loosely attached, covered by a brown epitheca. Zoœcia large, flat with raised margins, evenly punctured with large perforations, a raised calcareous reticulation of the front wall in later stages of growth. Orifice arched above, spreading near the base with a straight lower edge. Avicularia long and pointed, situated on one or both sides of the orifice about half-way up and directed upwards, nearly meeting above; frequently a third avicularium some way below the orifice, directed sometimes one way sometimes another, also long and pointed. Oœcia large, more prominent than the zoœcia and finely punctured throughout, resting on a ridge-like base. Dorsal surface of zoœcia smooth, elongate with a small separate area at the top occupied by what is probably a perforated plate, but the membranous covering is absent. On some zoœcia there are clusters of radical fibres.

Cargados, 30 fath.

This species appears to be most nearly allied to *Lepralia dorsiporosa*, Busk *, but the epitheca is brown, the pore is smaller and there is no perforated membrane over it, also the avicularia are very different; oœcia were not seen on *L. dorsiporosa*.

77. *Lepralia marginata*, n. sp. (Pl. 8, fig. 10).

Zoœcia small and neat, square or elongate with a raised margin and finely punctured, the surface becoming roughened with age. Orifice almost round with two spines close together above on young zoœcia and a tooth on either side, interiorly, more than half-way down. The roundness of the orifice is disguised by an inner lining which is arched above and ends abruptly a little above the lateral teeth, leaving a hollow or sinus

* Report Challenger Exp., x, pt. xxx, p. 143.

between. There is no indication of this form in the operculum. Avicularia on lateral eminences about on a level with the lower margin of the orifice or below it, pointed and directed forwards and downwards. Oœcia fairly large, rounded and with the same surface as the zoœcia.

Amirante, 125 fath.

78. *Lepralia depressa*, Busk, Brit. Mus. Cat., ii, p. 75.

These specimens are roughly calcareous. There is no perceptible difference in the size of the orifice in fertile and non-fertile zoœcia. There are from 2—4 spines above the orifice on some zoœcia. Avicularia are short and pointed, directed upwards, usually, one on either side of the orifice as in Smitt's* species *Escharella rostrigera*.

Salomon, 75 fath.

79. *Lepralia bicornis*, n. sp. (Pl. 8, fig. 11).

Zoarium yellowish grey, incrusting. Zoœcium with large orifice situated almost in the centre of its five-sided form, surface thick, opaque white, raised round the orifice, with faintly perceptible lines radiating towards the margin, where there are perforations. Orifice arched above widening downwards with an almost straight lower margin. A small, round avicularium to one side of the orifice or sometimes below it, large spatulate avicularia on separate areas scattered here and there over the zoarium. Oœcia of moderate size, rounded.

Cargados, 30 fath.; Salomon, 75 fath.

The orifice of this species is about the size of that of *L. pallasiana*, the zoœcium is shorter than that species and rounder and not punctured on the surface, and there are numerous avicularia.

80. *Porella concinna* var. *gracilis*, Hincks, Brit. Mar. Pol., p. 324.

Providence, 50—78 fath.

81. *Porella nitidissima*, Hincks, Ann. Mag. Nat. Hist., ser. 5, vi, 1880, p. 78.

Amirante, 29 fath.; Saya de Malha, 125 fath.

82. *Smittia signata*, Waters, Ann. Mag. Nat. Hist., ser. 6, iv, 1889, p. 17.

Saya de Malha, 125 fath.

83. *Smittia landsborovii*, Johnston. Hincks, Brit. Mar. Pol., p. 341.

Saya de Malha, 125 fath.

84. *Smittia marmorea*, Hincks, Brit. Mar. Pol., p. 350.

Amirante, 34 fath.

85. *Smittia tubula*, Kirkpatrick, Ann. Mag. Nat. Hist., ser. 6, i, 1888, p. 79.

Providence, 50 fath.

86. *Smittia affinis*, Hincks, Brit. Mar. Pol., p. 348.

There is a very little colony with small zoœcia, which are smooth with marginal

* Floridan Bryozoa, p. 57.

perforations. There are four spines above the orifice, which is channeled below and has a wide central and two small, lateral denticles within its lower margin. There is an avicularium placed sideways, sloping across below and almost over the channel in the peristome. There are no oœcia.

Seychelles.

87. *Smittia glomerata*, n. sp. (Pl. 8, fig. 12).

Zoarium loosely incrusting, yellow, mamillate. Zoœcia small, rotate or elongate, more or less raised in front or only the margins raised, giving a honeycomb appearance, turning various ways and heaped upon each other often, the surface roughened, perforated at the margin and sometimes with lines radiating from the orifice outwards. Orifice round or slightly pointed below with a central and two lateral denticles within, the peristome raised sometimes all round, sometimes at the back and sides, sometimes at the front and sides, there are crenulations within, below the upper margin, and above this a mark as it were the base of a single spine or, more rarely, of two. Avicularia to one side of the orifice, small and spatulate or pointed and raised on an eminence, or large and the length of the zoœcium or sometimes pointed with a serrated beak. Oœcia with an arched perforated area and raised process above.

Cargados.

88. *Smittia trispinosa*, Johnston. Hincks, Brit. Mar. Pol., p. 353.

There are several thin, brown, incrusting colonies which have a good deal of variation to be noticed in the avicularia, spines and height of the peristōme. They have all the usual three denticles below and crenulated inner edge to the peristome above, the front walls of the zoœcia roughened, with a perforated margin and oœcia with a perforated area in front, and sometimes raised processes above. Spines vary from 1—3.

Cargados, 20—30 fath.; Saya de Malha, 29 fath.

89. *Smittia nitida*, Verrill. Hincks, Ann. Mag. Nat. Hist., ser. 5, vii, p. 159.

The surface of the zoœcium is finely granular; there are four spines above the orifice; avicularia are directed outwards and downwards. This is a large species like *S. reticulata.*

Saya de Malha, 47—125 fath.; Salomon, 75 fath.

90. *Smittia ornata*, n. sp. (Pl. 8, fig. 13).

Zoarium forming thick layers of a pale brown colour covered by a transparent membrane, zoœcia large, broad, with slightly roughened surface, perforated round the margin. Orifice with the peristome much raised at the sides, often two spines above or a broad flat process in their place on the upper margin continuous with the raised sides of the peristome. Avicularia very varied in size, shape and position; usually a large pointed one on either side of the orifice, directed upwards and lying against the raised peristome, often a very large spatulate one, instead, lying across the zoœcium and almost covering it, or, there may be numerous, small, rounded and scattered

avicularia. There is a medium-sized central and two small lateral denticles within the orifice. Oœcia are smooth with a semicircle of curious raised, rounded bosses.

Saya de Malha, 150 fath.

91. *Smittia murarmata*, Kirkpatrick, Ann. Mag. Nat. Hist., ser. 6, i, 1888, p. 80, pl. 8, f. 5. (Pl. 8, fig. 14.)

The best colony in this collection is of a red colour and has often two instead of only one large avicularium. They are raised on the peristome on the sides of the orifice, reaching from rather below this and curving over the top. There are other colonies that have only one avicularium and shorter, looking more like Kirkpatrick's figure. Oœcia, not seen before, are rather flat and have an area of irregular shaped and sized perforations in front, being smooth above.

Cargados, 30 fath.

92. *Phylactella columnaris*, Kirkpatrick, Ann. Mag. Nat. Hist., ser. 6, i, 1888, p. 79.

Providence, 29 fath.

93. *Phylactella galeata*, n. sp. (Pl. 8, fig. 15).

Zoarium incrusting, pale brown, each large zoœcium seen standing out separately by the naked eye. Zoœcia with thick walls perforated round the margin with two or three rows of large holes, rising to a long, tapering, tubular neck with a thick rim having a small, pointed mucro on the lower margin, usually, and 10—12 thick, oral spines above. The primary orifice has a central, broad and two lateral, small, pointed denticles. Oœcia are raised on the tubular peristome arching over the orifice like a helmet, all the spines showing in front of it.

Salomon, 75 fath.

94. *Mucronella coccinea*, Abild. Hincks, Brit. Mar. Pol., p. 371.

Providence, 50—78 fath.

95. *Mucronella porelliformis*, Kirkpatrick, Ann. Mag. Nat. Hist., ser. 6, i, 1888, p. 8.

There are eight spines round the orifice on this species instead of the usual six, and where the oœcia are present they all show in front of it. They are long and slender. The orifice has a tooth on either side but none in the centre, the crenulated mucro and long, pointed avicularia directed upwards on either side of the orifice and the small zoœcia with glistening verrucose surface are as described by Kirkpatrick. There are, sometimes, two additional, small, pointed avicularia also directed upwards. Oœcia are open in front.

Providence, 29—78 fath.

96. *Mucronella delicatula*, Busk, Report Challenger Exp., x, pt. xxx, p. 156.

Amirante 25—80 fath.; Seychelles; Cargados, 28 fath.

This species closely resembles var. *a* of *Smittia trispinosa*, Johnston*.

97. *Mucronella ellerii*, MacG. var. *multi-aviculariata*, nov. (Pl. 8, fig. 16.)

This variety has 20 marginal spines and has an enormous number of avicularia.

* Hincks, Brit. Mar. Pol., p. 353.

There is the usual raised avicularium below the orifice and often a small rounded one on the other side of the rostrum ; there are small, round raised avicularia scattered round the orifice and over the oœcium and there are many, spatulate and very large, lying across the zoœcia in various ways. The colonies are loosely attached, large, brown expansions. On the dorsal aspect there is, usually, a single pore on the upper margin of the zoœcium, but sometimes there are two or three of these which are probably the bases of radicle fibres.

Cargados, 20—30 fath.; Amirante, 30 fath.

98. *Adeonella subsulcata* (Smitt).

Porina subsulcata, Smitt, Floridan Bryozoa, p. 28.

Cargados, 30 fath.; Seychelles, 39 fath.; Amirante, 20—80 fath.

99. *Cellepora megasoma*, MacGillivray, Prod. Zool. Vict. Dec. xv, p. 183.

This species is fairly abundant in incrusting and foliaceous forms. There is a good deal of variation in the development of the peristome but the main features of orifice, avicularia and oœcia remain constant.

Amirante, 22—85 fath.; Saya de Malha.

100. *Cellepora longirostris*, MacGillivray. Phillips, Willey's Zoological Results, p. 448.

These specimens have avicularia not mentioned by Miss Phillips, there is usually one lying across the inner aspect of the rostrum with sharply curved beak, there are several raised and directed outwards, scattered over the front wall and sometimes others large and spatulate between the zoœcia. Oœcia have faintly radiating lines and an arched ridge above, as in Miss Phillips' species and the colonies are incrusting like hers, not erect like MacGillivray's*. This species may be identical with *Mucronella tubulosa*, Hincks†.

Saya de Malha, 125 fath.; Cargados, 30 fath.

101. *Cellepora costata*, MacGillivray, Prod. Zool. Vict. Dec. xv, p. 183.

There are little ball-like colonies growing on Hydroids and also some small, freely branched colonies of this species. They have most of the features of *C. costata* as described by MacGillivray, but others that are more like *C. rota*. The surface is not fluted but smooth or pitted, the sculptured area on the oœcia is sometimes nearly circular and the peristome has a thin rim, the avicularia making a ridge up either side of this almost like in *Lagenipora spinulosa*.

Saya de Malha, 125—145 fath.; Providence, 50 fath.; Amirante, 35 fath.; Seychelles, 34 fath.; Cargados, 29—30 fath.

102. *Cellepora vagans*, Busk, Report Challenger Exp., x, pt. xxx, p. 198. (Pl. **8**, fig. 17.)

There are two colonies of what I believe to be this species although they have

* Trans. Roy. Soc. Victoria, xxi, p. 113, Nov. 1884. † Ann. Mag. Nat. Hist., ser. 5, vi, 1880, p. 383.

three denticles on the lower margin in place of the sinus. The dark membrane, covering all but the rostra, some branched mandibles to the avicularia and the absence of marginal spines all correspond with the description of this species rather than with that of *Holoporella tridenticulata* (Busk) which it resembles.

Cargados, 28—30 fath.

103. *Holoporella tridenticulata* (Busk), Report Challenger Exp., x, pt. xxx, p. 198.

There are the curious funnel-shaped processes distributed among the zoœcia on these specimens. There are from 2—4 spines and the usual teeth on the lower margin of the orifice, but they are not constant in being three, as sometimes one lateral tooth unites with the central tooth making a sort of sinus to one side, sometimes the central tooth is missing leaving a large, central sinus, and sometimes the margin is merely serrated. Avicularia are of two sorts, small on raised, suboral rostra and large, raised on tall processes, or sunk between zoœcia, and they may be long and dagger like or wide and fan like, the edge of the beak often serrated. The operculum is either dark, or horn colour. Oœcia are cucullate, having the granular surface of the zoœcia.

Salomon, 75 fath.; Providence, 29—55 fath.

104. *Holoporella albirostris* (Smitt). (Busk), Report Challenger Exp., x, pt. xxx, p. 193.

Amirante, 12—18 fath.

105. *Holoporella mamillata* (Busk).

Cellepora mamillata, Busk, Brit. Mus. Cat., ii, p. 87.

Amirante, 12—85 fath.

There are large incrusting layers of this species.

106. *Holoporella foliata*, MacGillivray.

Cellepora foliata, MacGillivray, Prod. Zool. Vict. Dec. xvii, p. 246.

This species is well represented in this collection. There are colonies measuring 2 inches by 2½ inches of a yellowish grey colour, growing from thick bases into flattened hand-like branches which sometimes anastomose with other branches and are studded over with jagged finger-like processes.

Amirante, 29 fath.; Cargados, 30 fath.; Seychelles, 39 fath.

107. *Holoporella simplex* (MacGillivray).

Cellepora simplex, MacGillivray, Prod. Zool. Vict. Dec. xvii, p. 241.

This is a large, coarse, brown species with large erect zoœcia, calcareous ridges running often from one to another. One incrusting colony is half an inch thick and measures five inches across, and has an irregularly mamillate surface, another from another locality is rather smaller in its parts and grows into tubular branches. The oral and only avicularium varies in size in the two colonies, a little, it is more raised and the rostrum more raised above it in the larger incrusting form.

Amirante, 29 fath.; Cargados, 30 fath.

108. *Holoporella discoidea* (Busk).

Cellepora discoidea, Busk, Report Challenger Exp., x, pt. xxx, p. 197.

This is a large species like the last but the orifice occupies a smaller portion of the zoœcium. There is a colony incrusting in thick layers and one that from an incrusting base sends up some flattened branches. The oral rostrum is sometimes low with a small avicularium and sometimes tall and rounded with a large avicularium, in both cases the beak is serrated.

There are several avicularia lying flat on the front wall of the zoœcium. The usual large vicarious avicularia are spatulate in shape, not lanceolate. The peristome is sometimes a good deal raised all round the orifice, the surface is roughened and the colour is light brown.

Saya de Malha, 150 fath.

Cyclostomata.

109. *Crisia conferta*, Busk, Brit. Mus. Cat., iii, p. 7. (Pl. 8, Fig. 18.)

These colonies are an inch in height. In an internode there are never more than 19 zoœcia or more than three branches. There is usually only one branch, but where an oœcium is present there are usually three, rather near together on the internode, one below and two above the oœcium. The joints between the series of zoœcia vary in colour from black to pale horn colour. There is a good quantity of this Crisia.

Farquhar atoll, 150 fath.

110. *Idmonea atlantica*, Forbes. Busk, Brit. Mus. Cat., pt. iii, p. 11.

Amirante, 15—80 fath.; Seychelles, 34 fath.; Cargados, 30 fath.

111. *Idmonea milneana*, D'Orb. Busk, Report Challenger Exp., xvii, pt. i, p. 13.

Providence, 55 fath.; Amirante, 25—80 fath; Saya de Malha, 125 fath.

112. *Idmonea serpens* (Linn.). Hincks, Brit. Mar. Pol., p. 453.

Saya de Malha.

113. *Idmonea radians* (Lamk.). Busk, Brit. Mus. Cat., pt. iii, p. 11.

Seychelles, 39 fath.; Amirante, 29 fath.

114. *Hornera robusta*, MacGillivray, Prod. Zool. Vict. Dec. xii, p. 72.

The largest specimen of this form is $1\frac{1}{2}$ by 1 inch in size, it is beautifully branched, but the branches do not anastomose, the peristome is always toothed.

Amirante, 35 fath.

115. *Entalophora proboscidea* (M. Edwards). Waters, Expéd. Antarct. Belge, 1904, Bryozoa, p. 91.

Amirante, 29—35 fath.; Seychelles, 39 fath.

There are some bits of colonies that, I believe, belong to this species.

1
2
3
4
5
6
7b
7a
7
8
10
15
9
9a
11
18
12
14a
13
17
14
16

116. *Lichenopora holdsworthii* (Busk).

Discoporella holdsworthii, Busk, Brit. Mus. Cat., pt. iii, p. 33.

There are more zoœcia in some of the series than Busk mentions, some of the series have as many as 12, but others are shorter, either curtailed at the outside or the inside of the series. Some colonies are much less regular than others. There are two rows of pores between the series, of the same size as those on the central area, which is about the size of the zoœcial orifice. The margins of the zoœcia are much broken, but appear to be elliptical, raised most at the back.

Cargados, 20—28 fath.; Saya de Malha.

117. *Cylindrœcium giganteum* (Busk).

Farella gigantea, Busk, Quart. Journ. Micr. Sc., iv, 1856, p. 93; Hincks, Brit. Mar. Pol., p. 535.

Cargados; Farquhar, reef.

118. *Farella atlantica*, Busk, Report Challenger Exp., xvii, pt. i, p. 37.

Amirante, 35 fath.; Providence, 50—78 fath.; growing on hydroids.

EXPLANATION OF PLATE 8.

Fig. 1. *Bugula neritina*, var. *rubra*, n.
Fig. 2. *Bugula neritina*, var. *tenuata*, n.
Fig. 3. *Bugula neritina*, var. *ramosa*, n.
Fig. 4. *Micropora bouchardii* (Aud.).
Fig. 5. *Membraniporella magnifica*, n. sp.
Fig. 6. *Cribrilina reticulata*, n. sp.
Fig. 7. *Bifaxaria vagans*, n. sp.
Fig. 8. *Microporella malusii* (Aud.).
Fig. 9. *Lepralia crassa*, n. sp.
Fig. 9a. „ „ Dorsal view.
Fig. 10. *Lepralia marginata*, n. sp.
Fig. 11. *Lepralia bicornis*, n. sp.
Fig. 12. *Smittia glomerata*, n. sp.
Fig. 13. *Smittia ornata*, n. sp.
Fig. 14. *Smittia murarmata*, Kirkpatrick.
Fig. 15. *Phylactella galeata*, n. sp.
Fig. 16. *Mucronella ellerii*, var. *multi-avicularíata*, n.
Fig. 17. *Cellepora vagans*, Busk.
Fig. 18. *Crisia conferta*, Busk.

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No. XI.—FOURMIS DES SEYCHELLES ET DES ALDABRAS, REÇUES DE M. HUGH SCOTT.

Décrites par A. Forel.

(Communiqué par Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Lu le 1 février 1912.

En 1907 j'ai énuméré les fourmis des Seychelles, Amirantes, Farquhar et Chagos récoltées par M. Stanley Gardiner (Transactions of the Linnæan Society of London, ser. 2, Zool., vol. xii., p. 91) et j'y ai ajouté celles qui avaient été précédemment décrites. Dès lors une espèce est venue s'y ajouter, la *Solenopsis sechellensis* Forel (Ann. soc. ent. Belgique, 1909, p. 55). Les récoltes de M. Scott viennent encore enrichir nos connaissances sur cette faune intéressante et prouver qu'elle est encore loin d'être épuisée.

Dans l'énumération suivante, nous marquerons d'une astérique les espèces ou formes déjà connues, mais nouvelles pour la faune des Seychelles et des Aldabras.

1. **Odontomachus hæmatodes* Linn. ☿. Seychelles : Mahé. Cosmopolite, sans doute importé.

2. **Anochetus* sp. ? ♂. Indéterminable sans l'ouvrière. Peut-être *africanus* Mayr, var. *madagascariensis* Forel. Seychelles : Mahé.

3. **Ponera ragusai* Emery. ☿. Seychelles : Mahé.

4. *Leptogenys maxillosa* Smith. ☿ (var. *vinsonella* Dut.). Seychelles : Dennis Island.

5. *Platythyrea wroughtoni* Forel, subsp. *sechellensis* nov.

☿. Légèrement plus grande que le type de l'espèce, et un peu plus robuste. Tête plus large, surtout plus élargie derrière, à peine plus longue que sa largeur postérieure. Le bord postérieur du nœud du pédicule a trois festons très distincts, bien plus distincts que chez le type de l'espèce. Du reste identique, en particulier la sculpture ; un peu moins de roux à l'abdomen.

Seychelles : Praslin.

Le type de l'espèce est de l'Inde (Travancore), et de Ceylan.

6. *Strumigenys scotti*, nov. sp.

☿. L. 2,2 à 2,5 mill. Mandibules droites, parallèles, linéaires, aussi épaisses à l'extrémité qu'à la base, sans bord terminal, longues comme la moitié de la tête ; leur bord externe est à peine convexe et leur bord interne à peine concave. Elles se terminent par deux dents longues, pointues, courbées en dedans, dont la supérieure est un peu plus

longue que l'inférieure. Le bord intérieur a en outre près de son extrémité deux dents dont la basale est presque deux fois plus longue que la suivante (préapicale). Tête cordiforme à peu près comme chez *godeffroyi* Mayr et *rogeri* Emery, mais encore un peu plus allongée et moins élargie derrière ; sa portion allant de l'épistome au bord occipital est plus longue que large. Les yeux sont visibles de devant et regardent de côté, le bord antérieur de la tête, sous les arêtes frontales, n'étant nullement incisé devant eux (ce caractère la distingue nettement de *rogeri* Em., dont elle est du reste fort parente). Le scape atteint environ le 5me postérieur de la tête. Dernier article de l'antenne environ aussi long que le reste du funicule. Promésonotum sans suture, ascendant devant, puis descendant derrière. La 2me moitié du profil du dos du thorax est horizontale, comprenant le derrière du mésonotum et la face basale de l'épinotum qui est plus longue que la face déclive et se termine par deux épines triangulaires très pointues, fines, beaucoup plus longues que larges. Le thorax n'est nullement bordé, sauf la face déclive ; mais celle-ci ne l'est que d'une très petite arête mousse, non translucide et sans trace de matières spongieuses. Premier nœud conique-arrondi, avec un pétiole antérieur plus long que lui et des masses spongieuses seulement dessous, pas derrière. Second nœud en ovale transversal, deux fois plus large que long et que le 1er, avec les masses spongieuses dessous, de côté et derrière.

Tête mate, densément péticulée-ponctuée. Thorax et pétiole du 1er nœud subopaques, en partie ridés en long, en partie réticulés. Le reste lisse. Sur le corps quelques rares soies dressées assez longues et faiblement clavées. Une rangée de poils obliques, courbés, à peine subclavés aux scapes devant et au bord interne des mandibules. La tête et les pattes n'ont que des poils subadjacents et faiblement clavés, jaunâtres, assez espacés.

D'un jaune testacé légèrement roussâtre ; dessus de l'abdomen d'un jaune brunâtre ou d'un brun jaunâtre.

Seychelles : Silhouette, Mare aux Cochons, vers 1000 pieds.

7. **Triglyphothrix striatidens* Emery, var. *felix* nov. ☿. Pilosité un peu moins dense et moins polyfide que chez le type de l'espèce. Premier nœud un peu plus tronqué devant. Du reste identique.

Seychelles : Félicité ; Silhouette, Mare aux Cochons. Evidemment importée. Cette espèce hindoue tend de plus en plus à devenir cosmopolite.

8. **Tetramorium bloehmanni* Forel, subsp. *montanum* Forel. Forme malgache. Aldabra (Fryer).

9. *Atopomyrmex scotti*, nov. sp.

☿. L. 5,7 mill. environ. Voisin de *steinheili* Forel de Madagascar, dont il diffère comme suit : Tête droite derrière, avec les angles occipitaux dentiformes, continués en arrière et en dessous de la tête par une arête plus forte. Yeux plus convexes, 13 stries environ au lieu de 18 entre les arêtes frontales qui sont plus rapprochées. Scape lisse (strié chez *steinheili*). Articles du funicule un peu plus grêles. Dos du pronotum large, déprimé concave derrière de droite à gauche, bordé devant et de côté d'une arête vive mais non translucide, échancrée largement au milieu du bord antérieur, formant un angle

antérieur vif, subdentiforme ; latéralement l'arête est subhorizontale, un peu lamelliforme, mais opaque ; le bord postérieur est en arc concave. Suture promésonotale marquée. Mésonotum assez déprimé et subbordé. Epinotum étroit, sans trace de bord, ni de dents, avec la basale convexe et la face déclive concave de profil ; les deux faces de même longueur, passant de l'une à l'autre par une courbe. Premier article du pédicule très long, presque aussi long que le thorax, cylindrique, portant en dessus, à son tiers postérieur, en guise de nœud une très haute écaille mince et tranchante, subrectangulaire, échancrée au sommet comme chez la *Formica exsecta*. Second nœud légèrement plus large que long, vu de côté cunéiforme, avec un sommet rétréci et presque tranchant (chez le *steinheili* le 1er nœud est bien moins long et a une écaille bicorne bien moins haute ; le 2me nœud est large et arrondi en haut ; puis le pronotum est tout autre et l'épinotum a deux petites dents). Pattes plus longues et cuisses moins renflées.

Luisant. Régulièrement et grossièrement strié en long, avec des côtés élevées entre les stries. Les stries des côtés de la tête tombent par un angle sur les stries divergentes de l'occiput. Stries du dos du pronotum concaves en dehors. Dos du mésonotum presque lisse (stries superficielles). Face déclive de l'épinotum, 1er article du pédicule (sauf le derrière de l'écaille en bas) et pattes lisses. Abdomen mat, densément et finement réticulé-ponctué. Dos du thorax et du 1er article du pédicule presque sans poils. Tout le reste du corps et les membres assez abondamment hérissés de soies raides, obtuses, plutôt courtes, d'un jaune brillant.

Noir ; pattes brun foncé ; antennes brun roussâtre. Extrémité des tarses et des mandibules ainsi que les articulations roussâtres.

♂ (?). L. 5,4 à 6 mill. Mandibules armées de 6 à 7 dents, mates, densément ridées. Tête plus large que longue, à bord postérieur faiblement convexe. Epistome caréné, avancé devant en arc. Les yeux énormes, en haricots, occupent presque tout le côté de la tête. Scape $2\frac{1}{3}$ fois plus long qu'épais, long comme le 2me article du funicule ; le 1er est aussi épais que long. Thorax bien plus étroit que la tête. Une légère échancrure entre le pronotum et le mésonotum ; celui-ci étroit, bordé latéralement derrière. Le scutellum est obtusément bidenté ou bituberculé en lieu et place des deux longs appendices qu'il porte chez l'*alluaudi* Emery. Epinotum simplement convexe. Premier article du pédicule très long et cylindrique, long comme $\frac{1}{2}$ ou les $\frac{2}{3}$ du thorax environ, mais sans trace de nœud ni d'écaille. Second nœud rectangulaire, rétréci devant, un peu plus long que large. Abdomen allongé. Ailes avec une cellule discoïdale et une cubitale, la nervure transverse s'unissant à la nervure cubitale à son point de partage.

Corps plutôt mat, irrégulièrement ridé—rugueux en long. Pédicule lisse avec quelques rides longitudinales. Abdomen finement réticulé et subopaque. Pilosité plus fine et plus pointue que chez l'ouvrière, oblique sur les membres, répandue aussi sur le thorax et le 1er article du pédicule, mais moins abondante. L'occiput et les côtés du thorax ont de grosses côtes et stries regulières, comme chez l'ouvrière.

D'un noir brunâtre ; abdomen et pattes d'un brun roussâtre. Antennes et mandibules roussâtres. Ailes brunes avec les nervures brunes aussi.

Seychelles : l'ouvrière provient de Praslin et le ♂ de Silhouette, du plateau de la Mare aux Cochons (1000 pieds), à la forêt (2000 pieds). Ils ont donc été pris séparément,

les ♂ venant voler à la lumière dans les montagnes de Silhouette. Néanmoins la convergence est telle et l'analogie avec le ♂ de l'*A. alluaudi* si grande que je suis à peu près certain de l'identité spécifique entre le ♂ et la ☿.

Cette espèce est très caractéristique par la forme du pronotum, des angles occipitaux et du 1er article du pédicule ; la forme du 2me article la distingue aussi de *steinheili* et de *foreli* Em.

10. *Vollenhovia lævithorax* Emery, subsp. *alluaudi* Emery.

♀ minor et major, ☿. Emery n'a décrit que la petite ♀ (l. 3,5 à 3,8 mill.).

☿ *major*. L. 5,7 mill. Fossette antennaire comme chez la ♀. Premier nœud plus cubique, plus verticalement tronqué devant et derrière que chez la petite ☿, avec un bord postérieur supérieur aigu, un peu relevé. Ponctuation de la tête plus serrée, parfois presque confluente ; stries ou rides plus grossières et plus abondantes. Du reste identique à la petite ☿, mais un peu plus robuste.

☿. L. 6,7 à 7 mill. Tête élargie derrière, un peu plus longue que large. Pronotum à épaules subanguleuses. La fossette antennaire se prolonge latéralement jusqu'au bord de la tête derrière l'épistome par une impression transversale un peu courbée (ce caractère est aussi visible chez la grande ☿, à peine marqué chez la petite). Premier nœud comme chez la grande ☿, mais son bord postérieur, fortement relevé, fait, vu de profil, l'effet d'une dent. Sculpture de la tête et du thorax plus forte que chez la grande ☿ ; les fossettes allongées, souvent confluentes, sont partout entremêlées de rides longitudinales qui divergent sur l'occiput. Abdomen lisse, à ponctuation fine et éparse (plus grossière sur le 2me nœud). Ailes avec une cellule cubitale. La nervure transverse s'unit au rameau cubital externe loin du point de partage. Une cellule discoïdale. Cellule radiale ouverte.

D'un brun assez foncé. Antennes, mandibules, épistome, joues et en partie les pattes rougeâtres. Ailes d'un brun assez foncé, à nervures brunes. Pilosité comme chez la grande et la petite ☿.

Seychelles : Silhouette, Mare aux Cochons, au dessus de 1000 pieds, nid dans les troncs d'arbres, en Septembre (MM. Scott et Stanley Gardiner).

11. *Vollenhovia piroskæ*, nov. sp.

☿. L. 2,2 à 2,4 mill. Rassemble à *subtilis* Em. de Key, mais d'un brun noir ou d'un noir brunâtre, avec les membres et les mandibules d'un brun roussâtre. Mandibules lisses, ponctuées, armées d'environ 6 (ou 7) dents. La portion postérieure de l'épistome insérée entre les arêtes frontales est un peu plus étroite, en tout cas pas plus large que celles-ci (un peu plus large chez *subtilis*). Le scape atteint le quart postérieur de la tête. Articles 2 à 8 du funicule plus de 3 fois plus épais que longs (moins de 3 fois, un peu plus de 2 fois chez *subtilis*). Tête et thorax encore plus aplatis que chez *subtilis*. Tête rectangulaire, d'un bon quart plus longue que large, à peine plus large derrière que devant (plus courte et un peu plus large derrière chez *subtilis*). Thorax plus étroit que chez *subtilis* ; la suture promésonotale fait absolument défaut. Face basale de l'épinotum très distinctement plus longue que large, beaucoup plus longue que la face déclive qui est très courte et oblique (aussi large que longue, et seulement un peu plus longue que la face

déclive chez *subtilis*). Dos du thorax très plat. Premier nœud un peu plus long que large; verticalement tronqué devant (bien plus nettement que chez *subtilis*). Second nœud plus large, un peu plus large que long (à peine aussi large que long chez *subtilis*). Cuisses renflées, comme chez *subtilis*.

Mate, densément ponctuée et striée ou ridée en long (y compris l'épinotum qui est lisse chez la *subtilis*); abdomen et nœuds lisses, finement et éparsément ponctués ainsi que les membres. Assez abondamment pubescente (pubescence jaunâtre). Pilosité dressée courte et très éparse (un peu plus abondante sur l'abdomen). Membres avec des poils courts et obliques.

Couleur (voir au début).

♂. L. 2,0 mill. Tête rectangulaire, plus longue que large, rétrécie devant les yeux qui sont situés au tiers antérieur et médiocres; son bord postérieur concave; occiput déprimé. Mandibules étroites, bidentées. Epistome convexe. Antennes de 13 articles; scapes deux fois plus long qu'épais. Articles 2 à 4 du funicule courts, aussi épais que longs ou à peu près. Thorax déprimé, large devant, rétréci derrière. Face basale de l'épinotum très déprimée, plus longue que large, rectangulaire; face déclive très courte, abrupte, subverticale. Nœuds arrondis, le premier non tronqué devant, du reste comme chez l'ouvrière.

Sculpture comme chez l'ouvrière, mais plus fine; mésonotum en partie luisant; tête et épinotum mats. Pubescence, pilosité et couleur comme chez l'ouvrière. Ailes pubescentes, subhyalines ou un peu teintées de roussâtre, avec les nervures atrophiées, les supérieures avec une rangée de longs poils derrière.

Seychelles: Silhouette, Pointe Étienne, contrée basse, près de la côte, 17 Septembre, 1908.

Très voisine de *subtilis* Em., mais suffisamment différente. Diffère d'*escherichi* Forel par sa couleur, sa forme plus étroite, ses nœuds plus étroits, la forme de la tête, etc., de *banksi* For. par sa forme bien plus déprimée, aplatie et par ses mandibules plus larges.

12. *Cardiocondyla emeryi* Forel, ♂, ailé. Correspond bien à la description d'André, mais les taches foncées de la tête et du thorax sont à peine brunâtres.

Seychelles: Mahé, Anonyme Island.

Le ♂ de Madère récolté par M. Schmitz dans le temps est au contraire entièrement d'un brun noirâtre; du reste identique.

13. **Cardiocondyla emeryi* Forel (subsp. *rasalamæ* Forel?). ♀. L. 2 mill. D'un brun roussâtre ou d'un roux brunâtre plus foncé que chez l'ouvrière. Ailes hyalines. Pattes d'un testacé clair. Tête, thorax et pédicule bien plus mats et plus fortement sculptés que chez l'ouvrière; nœuds plus larges. Correspond du reste bien à l'ouvrière de Madagascar.

Seychelles: Silhouette, 1500 pieds; Mahé, 1000 pieds. Peut-être est-ce simplement une variété foncée de l'*emeryi* et pas la vraie *rasalamæ*.

14. *Monomorium fossulatum* Emery, subsp. *sechellense* Emery. ♀. Seychelles: Silhouette, Mare aux Cochons, 1000 pieds.

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15. **Monomorium* sp. ? ♀. Indéterminable sans l'ouvrière. Peut être la ♀ du *M. termitobium* Forel? Seychelles: Félicité.

16. *Solenopsis seychellensis* Forel. ☿♀.

♀. L. 2,6 à 2,8 mill. Tête exactement comme chez l'ouvrière, mais légèrement plus courte (un peu plus longue que large), large comme le thorax. Mésonotum convexe, dépassant à peine le pronotum. Epinotum avec deux tubercules très allongés et peu marqués; ses deux faces de même longueur, la basale déjà fort inclinée en arrière. Nœuds comme chez l'ouvrière.

D'un brun foncé; membres d'un jaune brunâtre; cuisses d'un brun jaunâtre. Ailes manquent.

Du reste comme l'ouvrière.

Seychelles: Mahé et Silhouette, 1000 à 2000 pieds.

17. *Cremastogaster gibba* Emery. ♀. Seychelles: Mahé. Variété un peu foncée.

18. **Cremastogaster rasoherinæ* Forel. ☿♀♂.

♀. L. 5,5 à 5,8 mill. Ailes hyalines à nervures pales. Thorax plus étroit que la tête. Epinotum convexe, inerme, à face basale courte. Premier nœud avec un pétiole antérieur rétréci. Il est carré, mais arrondi derrière. Second nœud presque entier derrière, très faiblement impressionné. Entièrement lisse, même les joues qui n'ont quelques stries qu'à leur bord antérieur.

D'un jaune à peine roussâtre, avec le tiers postérieur de l'abdomen brunâtre.

Du reste comme l'ouvrière.

♂. L. 2 mill. Tête arrondie, un peu plus large que longue. Mandibules bidentées. Epinotum bas. D'un jaune pale; tête et abdomen d'un jaune brunâtre ou d'un brun jaunâtre.

Une ergatogyne de 3,7 mill., à thorax renflé.

Seychelles: Silhouette, Pointe Étienne et Mare aux Cochons; Mahé, de la mer à 1000 pieds.

Tout-à-fait semblable au type ☿ de Madagascar.

19. *Pheidole punctulata* Mayr. ☿☿♀♂. Seychelles: Silhouette; Mahé; Bird Island (Fryer). Aldabra (Fryer).

20. **Sima rufonigra* Jerdon. ☿♀. Seychelles: Silhouette, contrée basse "running on a stretch of bare granite between stretches of fern and scrub." Cette espèce a été sans aucun doute importée de l'Inde où elle est très commune.

21. *Tapinoma melanocephalum* Fabr. ☿♀. Seychelles: Silhouette, Mare aux Cochons, 1000 pieds.

22. **Technomyrmex albipes* Smith. ☿♀♂. Seychelles: Silhouette, Mare aux Cochons et Mont Pot-à-eau (1000 à 1500 pieds); Mahé, Anonyme Island, Cascade Estate, etc.

23. *Technomyrmex albipes*, subsp. *foreli* Emery. ☿♂♀.

Seychelles: Silhouette, Mare aux Cochons, Pot-à-eau; Mahé, Long Island, etc.

Parmi eux un monstre pseudandre comme celui que Mr Donisthorpe a trouvé aux serres de Kew chez l'*albipes* typique.

Il est intéressant de trouver la sous-espèce malgache à côté de l'espèce typique, dans les mêmes localités. S'agit-il d'une importation de l'espèce typique ?

24. **Brachymyrmex patagonicus* Mayr, subsp. *cordemoyi* Forel. ☿☿♂.

♂. A peu près impossible à distinguer du *patagonicus* typique ; la tête est un peu plus large derrière.

Seychelles : Mahé, Cascade Estate, div. localités ; Silhouette, Mare aux Cochons, etc.

Cette forme américaine était déjà connue de la Réunion et des Comores où elle a été importée. Elle s'est donc aussi introduite aux Seychelles.

25. *Plagiolepis alluaudi* Emery. ☿. Seychelles : Silhouette, Mare aux Cochons ; Félicité.

26. **Plagiolepis madecassa* Forel. ☿. Seychelles : Silhouette, terrains bas, et Mare aux Cochons ; Praslin ; Mahé, Anonyme Island ; Félicité.

Déjà trouvée à l'île Desroches (Amirantes).

27. *Prenolepis longicornis* Latr. ☿. Aldabra (Fryer). Déjà trouvée à Coetivy.

28. **Prenolepis steinheili* Forel. ☿. Aldabra (Fryer). Evidemment importée des Antilles.

29. *Prenolepis bourbonica* Forel. ☿♂. Seychelles : Mahé, Cascade Estate, Décembre et Janvier. Déjà trouvée à la Réunion, à Coetivy, aux Chagos, à Cargados Carajos.

30. *Prenolepis mixta* Forel. ☿☿♂.

☿. L. 4,8 à 5,2 mill. Tête élargie derrière, un peu plus large que longue, à côtés assez convexes. Le scape dépasse l'occiput de plus des $\frac{2}{5}$ de sa longueur. D'un brun plutôt clair, avec les mandibules et les membres d'un jaune sale ou un peu roussâtre. Ailes brunies (pas foncées). Quelques taches sur le thorax et le bord des segments abdominaux plus ou moins jaunâtres.

Du reste comme l'ouvrière.

Seychelles : Silhouette, la forêt au dessus de 2000 pieds ; Mahé ; Praslin, etc. Août et Septembre (♂ et ☿).

31. *Camponotus maculatus* Forel, subsp. *fulvus* Emery, var. *octonotata* Forel. ☿☿♂.

♂. L. 8,5 à 8,7 mill. Tête fortement convexe derrière, sans rétrécissement spécial à l'occiput. Entièrement d'un jaune roussâtre avec les mandibules et les membres jaunes et d'étroites bandes transversales brunes distinctes sur l'abdomen, quoique moins frappantes que chez la ☿. Ailes teintées de brun jaunâtre. Subopaque ou mat.

Seychelles : Silhouette, des terrains bas jusqu'à 2000 pieds ; Mahé ; Praslin.

La ☿ a 12,5 à 13,5 mill.

32. *Camponotus maculatus* Forel, subsp. *radamæ* Forel, var. *mixtella* Forel. ☿♂☿.

♂. L. 7 mill. Tête très distinctement et fortement rétrécie près de l'occiput, sans

former de cou proprement dit, mais en formant deux bords latéraux subparallèles tout-à-fait en arrière. D'un brun roussâtre. Thorax d'un roux brunâtre. Membres jaunâtres. Ailes teintées de jaunâtre.

♀. L. 12 mill. Tête en rectangle très allongé, à peine plus large derrière que devant. Couleur de l'ouvrière.

Aldabra (Fryer). Chez cette forme l'ouvrière est plus grande que chez la subsp. *fulvus* (6,5 à 11,5 mill. ou presque 12 mill.), tandis que la ♀ et le ♂ sont plus petits.

33. *Camponotus foraminosus* Forel, subsp. *grandidieri* Forel.

☿♂♀. Seychelles : Silhouette, terrains bas, Pot-à-eau, 1500 pieds ; Mahé, Cascade Estate, 800 à 1000 pieds (Décembre, Janvier).

34. *Camponotus foraminosus* Forel, subsp. *aldabrensis* Forel. ☿♀♂. Aldabra (Fryer).

35. *Camponotus foraminosus* Forel, subsp. *aldabrensis* Forel, var. *fryeri* nov.

☿. L. 6,5 à 8 mill. Thorax encore plus allongé et surtout plus convexe transversalement, avec l'épinotum plus arrondi que chez le type de la sous-espèce. Tête à côtés encore plus convexes ; les fossettes plus espacées et plus fines, surtout derrière. Tête plus ou moins rougeâtre devant. Du reste comme l'*aldabrensis* typique.

Aldabra (Fryer).

36. *Camponotus thomasseti*, nov. sp.

☿. L. 4 mill. Tête carrée, légèrement plus longue que large, à côtés convexes, à bord postérieur droit ou à peine concave. Yeux en arrière, vers le 3me cinquième. Mandibules épaisses, probablement armées de 5 ou 6 dents. Epistome biéchancré devant, arqué en entier au milieu du bord antérieur, sans carène, assez plat, plus large que long. Les côtés divergent faiblement d'arrière en avant et sont même un peu convexes (convergent de nouveau devant), de sorte que la portion latérale est un grande partie cachée sous les joues. Aire frontale en rhombe transversal. Arêtes frontales très divergentes, un peu plus éloignées derrière l'une de l'autre que des côtés de la tête. Le scape dépasse le bord occipital de son épaisseur. Dos du thorax subdéprimé et subbordé ; sutures très fortement imprimées ; un étroit métanotum transversal au fond de la suture mésoépinotale. Pronotum plus large que long ; mésonotum aussi. Face basale de l'épinotum rectangulaire, d'un quart plus longue que large, presque plate, plus obtusément subbordée derrière que latéralement. Face déclive concave, plus courte que la face basale, verticale en haut. Ecaille épaisse, large, basse, inclinée en avant, aussi épaisse au sommet, qui est transversal, obtus et rectiligne qu'en bas. Cuisses assez déprimées et dilatées au milieu.

Luisant et chagriné ; abdomen transversalement ridé ; thorax réticulé ainsi que le devant de la tête. Ponctuation éparse très effacée, un peu plus nette sur la tête. Quelques fossettes sur l'épistome. Pilosité très éparse, un peu plus répandue sur l'abdomen ; tibias, joues et scapes sans poils dressés, seulement avec une pubescence diluée et adjacente ; celle-ci presque nulle sur le corps.

D'un brun rougeâtre ; abdomen brun, avec le bord des segments d'un jaune vif ; mandibules, antennes, tarses, devant de la tête et articulations roussâtres ou rougeâtres.

C'est probablement une ☿ media.

♂. L. 3,8 mill. Tête convexe derrière, aussi large que longue ; le scape la dépasse d'un bon tiers. Dos du mésonotum un peu déprimé ; épinotum uniformément convexe. Ecaille comme chez l'ouvrière. Sculpture et pilosité de l'ouvrière. Brunâtre ; abdomen d'un brun foncé, à bord des segments jaunâtre. Tarses, scapes, articulations et extrémité des mandibules jaunâtres. Ailes teintes de jaune roussâtre.

Voisin des *C. greeni* Forel et *wedda* Forel de Ceylan. Habite probablement les cavités végétales (tiges).

Seychelles : Mahé, Cascade Estate, vers 1000 pieds ; Silhouette, forêt près de la Mare aux Cochons. Je dédie cette espèce à M. H. P. Thomasset.

No. XII.—HYMENOPTERA, ICHNEUMONIDÆ.

By Claude Morley, F.E.S., F.Z.S., etc.

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

(Read 1st February 1912.)

Subfamily **Cryptinæ**.

Hemiteles Gravenhorst, Ichn. Europ. ii (1829), 781.

1. *Hemiteles cingulatorius*, sp. n.

A black and testaceous species, with the abdominal segments pale-banded. Head black with the eyes large, but hardly prominent; vertex deplanate, closely punctate and dull; frons with a central nitidulous line, and apically impressed on either side above the scrobes; face dull, subtransverse and in ♀ narrowly rufescent below antennæ, in ♂ entirely with mouth and cheeks stramineous; clypeus convex, strongly discreted with its apex truncate and subbituberculate, of ♀ rufescent throughout; mandibles broad and except apically testaceous, equally bidentate and closely punctate; palpi whitish. Antennæ filiform, basally subattenuate, black throughout with the scape testaceous beneath and in ♀ the centre more or less broadly white-banded; three basal flagellar joints strongly elongate, and in ♀ apically subnodulose with the fourth much shorter and apically white. Thorax black and dull with apex of metathorax, in ♂ pronotum and in ♀ disc of mesonotum rufescent; whole pleuræ and sternum, except a mesopleural mark, in ♂ testaceous and in ♀ rufescent; metanotum, except basally, strongly and somewhat coarsely punctate with the ill-defined areola subquadrate and parallel-sided and both basal and apical carinæ distinct, the latter with small and especially in ♀ acute apophyses; petiolar area deplanate and entire. Scutellum strongly convex, nitidulous and in ♀, together with its whole region, rufescent and in ♂ black with its region testaceous. Abdomen black with apices of three basal segments, and the ♀ anus, stramineous-white; basal segment nearly thrice longer than apically broad, but slightly explanate throughout, nitidulous with no tubercles; second and third of ♀ explanate, shagreened, convex and the following more nitidulous, of ♂ slender and subcylindrical; terebra nearly half length of abdomen, apically attenuate, with the ferrugineous spicula subarcuate at its apical third. Legs testaceous and not stout with the posterior femora black or nigrescent above, and the hind tarsi with their coxæ discally and their basally constricted tibiæ entirely black. Wings not ample, hyaline with very slightly infumate central and apical ♀ fasciæ; all nervures strong to apex; outer nervure of the small areolet entirely wanting; nervellus strongly postfurcal and intercepted at its centre. Length, 3½—5 mm. ♂♀.

This very distinct species, the only Cryptid yet found here, is certainly related to a remarkable degree with *H. cingulator* Grav. (*cf.* Morl., Ichn. Brit. ii. 134), but differs, beyond its profuse colouration, in many salient structural characters. According to Schmiedeknecht's table of palæarctic species, it is most closely allied to *H. subannulatus*, Bridg. (Term. Füz. 1897, p. 128).

Twelve males and nine females were taken in Silhouette (low coconut-planted country near the coast at Pointe Étienne, 17th Sept. 1908, etc.; Mare aux Cochons marshy plateau and adjacent jungle, Aug. and Sept. 1908); and Praslin (Côtes d'Or Estate, end of Nov. 1908).

Subfamily **Pimplinæ**.

ECHTHROMORPHA Holmgren, Eugen. Resa: Insect. (1868) 406.

2. *Echthromorpha variegata* (Brullé).

Pimpla variegata Brullé, Hist. Nat. Ins. iv. 91, ♀. *Polyamma continuum* Kriechb., Berl. Ent. Zeit. xxxix. 1894, p. 304, ♂. *E. continua* Krieg., Sitz. Nat. Ges. Leipzig, 1899, p. 57, ♂. *Echthromorpha rufo-maculata* Cam., Trans. Linn. Soc. ser. 2, Zool., xii. 1907, p. 79, ♂♀. *E. variegata* Krieg., Mitt. Zool. Mus. Berlin, 1909, p. 316, ♂♀.

This species has not been taken in the Seychelles Islands since it was brought forward under a new name by Cameron, upon the strength of a single pair, found by Prof. J. Stanley Gardiner on Coetivy, which was not visited by the later expedition. The female is entirely typical, but the male is paler than specimens I have seen from Nubia and India. It occurs throughout tropical Africa and, though not so stated by Krieger, is a common species in southern India.

3. *Echthromorpha notulatoria* (Fabr.).

Cryptus notulatorius Fabr., Piez. 77, ♀. *Ichneumon notulatorius* Thunb., Mém. Acad. Pétersb. 1822, p. 279, 1822, p. 362; Trentep., Isis, 1829, p. 849, ♀. *Pimpla continua* Brullé, Hist. Nat. Ins. iv. 92; Voll., Stett. Ent. Zeit. 1879, p. 149, ♀. *Chrysopimpla ornatipes* Cam., Mem. Manchester Soc. 1899, p. 186; *cf.* Spolia Zeylanica, 1905, p. 135, ♂♀. *Echthromorpha læva* Cam., Journ. Str. Br. R. Asiatic Soc. 1903, p. 135, ♂. *E. latibalteata* Cam., Trans. Linn. Soc. ser. 2, Zool., xii. 1907, p. 81, ♂.

It had struck me as strange, when writing my Fauna of India, that no one should have noticed *Chrysopimpla ornatipes* before 1899; I am, consequently, delighted to find that my friend Dr Krieger has been enabled to synonymise it with the above Fabrician insect from Madras (*cf.* Mitt. Zool. Mus. Berlin, 1909, p. 311).

Chagos: our claim to it in these Islands lies in the single typical male (described as new by Cameron), captured on 25th June, 1905, on Peros Banhos Atoll. In India it is a common species extending from Ceylon to Assam; and, in the form *E. læva* Cam., which I consider distinct, or Krieger's var. *insulana*, it is found throughout the Malay Archipelago to Batjan or Batchian, in the Moluccas.

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4. *Echthromorpha rufa*, Cameron.

Echthromorpha rufa Cam., Trans. Linn. Soc. ser. 2, Zool., xii. 1907, p. 80, ♂♀.

This large and distinct species appears most closely allied to *E.* (*Stagnopimpla*) *hyalina*, Sauss. Grandid. Hist. Madagasc. xx. pl. 16, fig. 1, to which Cameron makes no reference, according to Krieger's description of both sexes (Mitt. Zool. Mus. Berlin, 1909, p. 327), though the markings are far more uniform. It is certainly not Brullé's *Pimpla macula*, nor its variety *vittata*, found in Mauritius and Réunion, as indicated by Cameron.

I have seen the single typical pair, described from Mahé, where they were taken in 1906, and these are in every way co-specific with sixty examples captured during the later expedition in Silhouette and Mahé. Those from the former island were secured in the high forest near Mont Pot-à-Eau, mostly at about 1500 feet, in August 1908; they were common on the marshy plateau of Mare aux Cochons at about a thousand feet during that and the following month; and a female and several small males were taken in the lower cultivated country in September 1908. On Mahé, it was noted on seven occasions at Cascade Estate, between eight and fifteen hundred feet, during January and February, 1909; near Morne Blanc at about a thousand feet in November, 1908; and on the slopes of Morne Seychellois between one and two thousand feet on the fourth of the following February. It is the commonest and most conspicuous Ichneumonid of the Seychelles Islands.

Xanthopimpla Saussure, Grandid. Hist. Madagasc. 1892, xx. Pl. xiii.

5. *Xanthopimpla cous*, sp. n.

A distinctly red, and not flavescent, species with no black markings and the metanotum glabrous throughout. Head with the eyes and ocellar region alone black. Antennæ about length of body, deep black with only underside of scape and pedicellus rufescent. Thorax glabrous and strongly nitidulous with notauli deeply impressed though not extending to disc, sternauli strong and entire; metanotum glabrous with no carinæ; only the lateral costæ distinct, extending from near posterior radices to the hind coxæ; spiracles elongate and large; apophyses wanting. Abdomen immaculate and very finely punctate with the transverse impressions on segments two to six crenulate; terebra stout, deep black, straight and hardly double length of the basally impressed first segment. Legs unicolorous with the hind claws strongly curved and shorter than their black pulvilli. Wings ample and evenly a little infumate throughout; stigma, nervures and radius deep black; basal nervure subcontinuous; areolet small, transverse-quadrate and distinctly a little petiolate; nervellus strongly postfurcal and intercepted at its upper fourth. Length, ♀ 10—12, ♂ 5—8 mm.

The deep black antennæ and nervures contrast conspicuously with the uniformly pale body. It is related in its deficient metanotal sculpture to *X. tigris*, Krieger (Sitz. Nat. Ges. Leipzig, 1899, p. 75), but in all other respects almost exactly resembles my Indian *X. immaculata*; it cannot, I think, be Holmgren's *Pimpla citrina* (Eugen. Resa: Ins. 1868, p. 404), recorded from Mauritius. In the present collection it was mixed with *Echthromorpha rufa*, to which it bears a strong superficial resemblance.

Mahé; I have examined four males and two females, mainly from near Morne Blanc at an altitude of about a thousand feet, in October and November, 1908; but also from the slopes of Morne Seychellois, at least five hundred feet higher, early in February, 1909. Silhouette; a single male of the minimum size was secured at Mare aux Cochons during September, 1908.

Polysphincta Gravenhorst, Ichn. Europ. iii (1829), 112.

6. *Polysphincta bohemani*, Holmgren.

Polysphincta bohemani Holmgr., Sv. Ak. Handl. 1860, n. 10, p. 30; Thomson, Opusc. Ent. xii. 1253 et xix. 2128; Morl., Ichn. Brit. iii. 128, ♂♀.

Var. *tropicus*, var. nov. I cannot consider this more than a form of Holmgren's species, with which it agrees in every particular except in having the rufescent colouration replaced by testaceous, the mesonotal lobes subinfuscate and the disc less scabrous than in the typical form.

It is interesting to find a female and two males of this palæarctic species in the Indian Ocean, though the genus is known to exist in peculiar forms in Ceylon. The present individuals were doubtless introduced, with the Araneidea upon which the whole genus has for long been known to prey; the examples I have examined were captured upon the marshy plateaux at Mare aux Cochons and elsewhere on Silhouette in August, 1908, and at an altitude of over eight hundred feet at the Cascade Estate on Mahé about four months later.

Subfamily **Tryphoninæ**.

Orthocentrus Gravenhorst, Ichn. Europ. iii (1829), 358; Thomson, Opusc. Ent. xxii. 2423.

7. *Orthocentrus protuberans*, Holmgren.

Orthocentrus protuberans Holmgr., Sv. Ak. Handl. 1855, p. 333; Thomson, Opusc. Ent. xxii. 2429; *cf.* Roman, Nat. Unt. Sarek. iv. 352. *O. insularis* Ashm., Journ. Linn. Soc. Zool. xxv. 1894, p. 142.

Var. *deletus*, var. nov. Agreeing in every way with the typical description of authors (Morl. Ichn. Brit. iv. 62), except in having the basal nervure continuous through the median, the metathoracic costulæ entire, the sternum testaceous and the areolet entirely wanting.

O. protuberans is usually regarded as a subarctic species, occurring in the northern latitudes of America (whence Ashmead described the synonymous *O. insularis* in 1894), Europe and Asia, extending to France and Austria. I can, however, discover nothing but the above points of divergence between typical examples of this species in my collection and four females, captured on Mahé and in Silhouette; those from the latter were obtained in the high forest above Mare aux Cochons on 2nd September, 1908, and that from the former at the Cascade Estate during the following January, at an altitude of some thousand feet.

Subfamily **Ophioninæ.**

Henicospilus Stephens, Illus. Mand. vii (1835), 126.

8. *Henicospilus longescutellatus*, Kriechbaumer.

Ophion (*Henicospilus*) *longescutellatus* Kriechb., Berl. Ent. Zeit., xxxix. 1894, p. 308, ♀. *O. anceps* Tosq., Ichn. d'Afr. 1896, p. 392, ♂.

This species has hitherto been recorded only from western Africa, but no doubt can, I think, be entertained that the following specimens entirely coincide with the above descriptions, which I am sure are those of the sexes of a single species.

Five specimens were obtained of this insect on Mahé; first in the cultivated country at the end of 1908, and early in 1909 both at the Cascade Estate, and in the high forest behind Trois Frères, all at an altitude of about a thousand feet. To the present species also belongs the female recorded by Cameron (Trans. Linn. Soc. ser. 2, Zool., xii. 1907, p. 79) from Trou aux Cerfs in Mauritius, where it was captured on 18th August, 1905, under the tentative name of *Ophion rufus*, Brullé, which no one is now able to identify, though it is certainly distinct from both *O. rufus*, Tosq. (=*antarkarus* Sauss., Grandid. Hist. Madagasc.) and *O. rufus*, Kriechb.

9. *Henicospilus antarkarus*, Saussure.

Paniscus perforator Smith, Ann. Mag. Nat. Hist. ser. 4, xvii. 1876, p. 449, ♀ (?). *Enicospilus antarkarus* Sauss., Grandid. Hist. Madagasc. xx. 1892, fig. *Ophion rufus* Tosq., Ichn. d'Afr. 1896, p. 378, ♀ (*nec* Brullé *et* Kriechb.).

Certainly the commonest African species of the genus; I have examined examples from Natal, the Kentani district, Madagascar, Mauritius, etc. In the present collection is a single female found on Assumption Island in 1909 by R. P. Dupont.

10. *Henicospilus leionotus*, Tosquinet.

Ophion (*Enicospilus*) *leionotus* Tosq., Ichn. d'Afrique, 1896, p. 393, ♀.

I have examined a single female, which agrees to a remarkable extent with Tosquinet's description, though several divergent points are so striking that I hesitate to entirely regard it as synonymous therewith: principally the radial nervure is sinuate almost as strongly as in Szepligeti's subgenus *Dicamptus* of *Allocamptus* Thoms., the antennæ are nigrescent and much longer than the body, and the corneous discoidal mark is dull ferrugineous. I propose to term it var. *longicornis*, var. nov.

The example in question was captured on the marshy plateau of Mare aux Cochons, on Silhouette, at an altitude of over a thousand feet on 27th August, 1908.

Xanthocharops, n. n.

Having the capital, pedal and thoracic structure of *Charops*, Holmgr. (Sv. Ak. Handl. 1858, p. 39), though materially differing in its subclavate and pale-banded flagellum, subdeplanate and shorter abdomen, and in the alar venation:—radial nervure basally curved, emitted from basal third of the somewhat conspicuous stigma; external

cubital nervure broadly arcuate at apex of the wanting areolet; intercubital nervure very short; brachial cell short and broad; upper basal emitted from median some distance before lower basal nervure; neuration of hind wing very imperfect and apically entirely wanting.

11. *Xanthocharops primus*, sp. n.

A pale flavous species with the eyes, ocelli, centre of occiput, antennæ above except at their apical third, three mesonotal vittæ, a mesopleural line, base and extreme apex of metathorax, scutellum, base of all the abdominal segments broadly and centre of first, with lines on the hind legs, black. Face slightly prominent, the apically infuscate mandibles weak with the lower tooth much the smaller. Flagellum pilose, apically subclavate and brunneous, paler before the black apex. Thorax strongly and evenly punctate; metathorax very short and declived throughout, with only the strongly sinuate basal transcarina traceable; lateral costæ distinct. Abdomen pilose and strongly nitidulous, cylindrical and not compressed; anal styles slightly exserted. Legs not slender, hind calcaria fully half length of metatarsus. Wings broad, hyaline, with stigma piceous and all the nervures dark. Length, $5\frac{1}{2}$ mm. ♂ only.

A remarkable insect of the flavescent Oriental type, such as *Xanthopimpla*, *Xanthexochus* and *Xanthocampoplex*.

Mahé; the single male was captured near Morne Blanc, in 1908.

Dioctes Förster, Verh. pr. Rheinl. 1868, p. 153.

12. *Dioctes vulgaris*, Morl.

Dioctes vulgaris Morl., Fauna of British India, ined. (MS.)

A black species with the abdomen except basally, the scape beneath, mouth and all the legs, red; the metathorax coarsely sculptured, grey-pilose, with distinct areæ; the basal segment parallel-sided with its apex nearly sphærical and apically constricted; the areolet obviously wanting and brachial cell subparallel-sided. Length, 6—7 mm.

It is hardly necessary to give a more detailed description of this distinct species, which is instantly known by the brilliantly red scape, black-dotted above, and the peculiar structure of the basal segment, since such will appear in my forthcoming volume of the Fauna of India.

The connection between the fauna of these islands and the Oriental fauna, rather than that of the Zanzibar Coast, is well illustrated in the capture of this Bengalese insect in three of the Seychelles Islands. Mr Hugh Scott took half a dozen females on the marshy plateau of Mare aux Cochons in August and September*, 1908, on Silhouette; in the Coco-de-Mer forest in the Vallée de Mai on the Côtes d'Or Estate at the end of the latter month, on Praslin; and at an altitude of between eight hundred and a thousand feet at the Cascade Estate, on Mahé.

* A single ♀ of the present, or an allied, Campoplegid genus was captured in Silhouette (Seychelles) at the Mare aux Cochons during September, 1908. This is, however, in poor condition and I do not feel justified in bringing forward a new species upon incomplete material in so difficult and obscure a group of insects.—C. M.

Tarytia Cameron, Journ. Bombay Nat. Hist. Soc., 1907, p. 588.

13. *Tarytia minuta*, sp. n.

A pretty little red and black species, with the legs and orbits broadly pale. Head bright pale flavous with only the occiput, ocellar region and sometimes centre of frons black; vertex not narrow, cheeks broad, mandibles subequal in length and apically infuscate; clypeus discreted and transverse, apically broadly rounded. Antennæ longer than head and thorax, black or nigrescent, hardly paler basally beneath, with the flagellar joints elongate. Thorax dull and not very finely punctate, brick-red with dorsum of metathorax, centre of mesonotum throughout and the scutellar region black; notauli and sternauli wanting, but the former represented by a flavidous line to disc on either side; metathorax declived throughout, with fine and determinate areæ. Scutellum black. Abdomen black and somewhat dull, with very fine sculpture; basal segment elongate, nitidulous and apically subincrassate; second rarely pale; venter entirely stramineous, with the concolorous ♂ valvulæ elongately exserted, and the deflexed black terebra two-thirds length of abdomen. Legs very slender, pale testaceous, with the hind tibiæ and tarsi subinfuscate. Wings small, broad and quite hyaline; stigma large, triangular and pale testaceous; the discal nervures and especially basal abscissa of radius with the single elongate intercubital nervure strong, remainder weak with the apical nervures and basal part of median obsolete; radial cell very short and apically reflexed; nervures of hind wing obsolete with the second recurrent, part of median and the subopposite nervellus alone traceable. Length, $2\frac{3}{4}$—3 mm. ♂♀.

Much smaller than the Indian species of this genus and rendered distinct by its many obsolete nervures and peculiar coloration.

The typical female was captured at an altitude of between eight hundred and a thousand feet at Cascade Estate in Mahé during January, 1909; but half a dozen including both sexes had already been secured upon three occasions on the marshy plateau and adjacent jungle at Mare aux Cochons in August and September, 1908, in Silhouette. It is almost certainly one of the indigenous species, probably of an archaic type. To the best of my knowledge the genus is confined to the Oriental Region.

Cremastus Gravenhorst, Ichn. Europ., iii (1829), 730.

14. *Cremastus punctus*, sp. n.

A somewhat small black species with the legs and most of head rufescent, orbits flavidous. Head transverse and dull, ferruginous or badious with the orbits more broadly internally, the face, clypeus and mouth, flavous; face somewhat coarsely punctate, dull and centrally elevated, clypeus smoother and apically margined; upper tooth of the apically nigrescent mandibles slightly the longer. Antennæ slender, filiform and black with the scape paler beneath; basal flagellar joints elongate. Thorax subcylindrical and black with the mesonotum piceous, pleuræ and prothorax with extreme apex of metathorax laterally ferrugineous; mesonotum strongly and evenly punctate, very dull, with notauli apically deep and extending shallowly to disc; metathorax finely scabriculous with

complete areæ; areola elongate, parallel-sided and apically truncate, emitting costulæ before its centre; petiolar area deplanate, trans-strigose and distinctly discreted. Scutellum black and finely punctate. Abdomen narrow and apically compressed, with the third segment indefinitely badious laterally; basal segment nitidulous and subglabrous, laterally margined and apically convex; second nitidulous, very finely and longitudinally aciculate throughout; following pilose, with terebra two-thirds length of abdomen. Legs dull testaceous with the anterior hardly paler basally; hind coxæ, trochanters and tarsi slightly nigrescent. Wings small and hyaline, with stigma piceous and radix testaceous; basal nervure continuous; brachial cell apically rectangular below, with basal half of second recurrent nervure nearly entirely fenestrate; nervellus antefurcal and subgeniculate, though not intercepted, far below its centre. Length, 6 mm. ♀ only.

This species is closely allied to *C. schœnobius* Thomson, O. E. xiv, 1446 (= *decoratus*, Holmgr., *nec* Grav.) in its apically strong notauli, deeply punctate mesonotum and rectangular discoidal cell.

Silhouette; a single female was captured in September, 1908, at Mare aux Cochons.

Pristomeridia Ashmead, Proc. U. S. Nat. Mus., 1900, p. 100.

15. *Pristomeridia ruficaput*, sp. n.

A slender, black species with the under surface and legs, except apices of hind ones, rufescent testaceous. Head dull, deplanate behind the internally parallel-sided eyes, and rufescent with only the ocellar region and occiput black; face subtransverse, dull and centrally slightly prominent; mouth paler, with the discreted clypeus subcircular and centrally tuberculate; mandibles weak, with teeth of equal length and the upper the larger. Antennæ filiform and slender, two-thirds length of body and not apically attenuate; black with the scape entirely testaceous, and the basal flagellar joints elongate. Thorax slender and slightly shining with the sternum entirely, prothorax to tegulæ, both meso- and meta-pleuræ below, and a dot beneath hind tegulæ, rufescent; mesonotum shagreened, with notauli strong to near disc; metathorax somewhat smooth, with distinct areæ; areola elongate and parallel-sided, basally constricted to the triangular basal area; costulæ and lateral costæ entire. Scutellum black, subconvex and not large. Abdomen slender with three basal segments shagreened and the following compressed, second narrowly testaceous apically; basal segment slender with the postpetiole a little explanate; ♂ valvulæ exserted and testaceous; terebra fully two-thirds length of abdomen. Legs subelongate, slender and testaceous with the hind tibiæ and tarsi entirely nigrescent; hind femoral tooth at its apical third and obliquely triangular, succeeded by a row of minute serrations. Wings hyaline, neither narrow nor extending to anus; stigma nigrescent and not broad; basal nervure continuous; areolet wanting; radix and tegulæ testaceous; nervellus neither arcuate nor intercepted. Length, 4½—5 mm. ♂♀.

I have little hesitation in placing this species in Ashmead's genus, rather than in *Pristomerus* Holmgr., since the hind femora are not at all incrassate and the nervellus is obviously entire, though the hind femoral tooth is not near the apex and is succeeded by distinct serrations. Our species is allied to *P. marginicollis* Cam. (Tijds. v. Ent. 1907, p. 110, ♀) from Sikkim, but there can be no doubt respecting its specific distinctness.

A single pair has reached me from the Isle of Mahé; the typical female was found in the high forest of Morne Blanc and Pilot, during November, 1908; and the male is from the country above Port Glaud, at an altitude of between five hundred and a thousand feet, on the 5th of the same month.

Dicolus Förster, Verh. pr. Rheinl., 1868, p. 171.

Head small; labrum not exserted; clypeus convex and laterally compressed; basal flagellar joint longer than the second; flagellar joints of ♂ not emarginate; metathorax transimpressed before its central carina, of ♀ not apically truncate; terebra elongately exserted; hind coxæ nitidulous and femora mutic, their tibiæ subincrassate and basally distinctly constricted; stigma broadly triangular and not small; areolet wanting; median nervure of hind wing not basally evanescent.

The *Plectiscini* have received so inadequate attention that it appears expedient to shortly summarise the characters upon the strength of which I consider the following species should be included in the present genus, which was employed by Prof. Thomson as a subdivision of *Megastylus* Schiödte, though not so classed by its author in 1871. I have heard of the description of no species outside Europe, and on that account alone tentatively describe the following as new.

16. *Dicolus equatorius*, sp. n.

A small, nitidulous, black insect with the prothorax, legs except apically and centre of abdomen, pale. Head glabrous, nitidulous and a little transverse, black with the mouth and apex of the prominent clypeus testaceous; ocelli and face at base of antennæ distinctly elevated; face shining and evenly rounded throughout. Antennæ black and pilose, as long as the body, slender and apically attenuate, with the pale scape and the flagellar joints elongate. Thorax strongly nitidulous and subglabrous; mesonotum convex, with a strong central longitudinal impression; prothorax rufescent; mesopleuræ transimpressed below radices; metathorax small and hardly sculptured, but with the lateral costæ complete and a strong central transcarina; apophyses small and subacute. Scutellum smooth, black and convex. Abdomen black or nigrescent, with apex of second and disc or whole of third segment indefinitely flavidous; basal segment convex and linear, exactly parallel-sided, fully thrice longer than broad, discally subcarinate and basally concave; following broader, not compressed, nitidulous and sparsely white-pilose; ♂ valvulæ not exserted; terebra fully half length of abdomen, slightly reflexed, black and pilose, with the spicula red and acuminate. Legs clear testaceous with all the tarsi, the stout and pilose hind tibiæ with base and apex of their femora, subnigrescent; pulvilli shorter than the slender, curved claws; calcaria short and inconspicuous. Wings ample and hyaline; stigma and tegulæ piceous, radix testaceous; radial and cubital nervures evenly curved throughout, forming no areolet, and the latter continuous with the bifenestrate second recurrent; basal nervure continuous; nervellus entire, postfurcal and not intercepted. Length, 3 mm. ♂♀.

Two males were found in the high country of Silhouette, near Mont Pot-à-eau, during August, 1908; the remainder are from Mahé and comprise three males from the slopes of

Morne Seychellois at 1500—2000 feet in February, 1909; from forest land on Cascade Estate, near Mount Harrison, at 1700 feet, early in the following month; and from forest above Cascade Estate in January, 1909, where also the typical female occurred in the following month, at an altitude of between one and two thousand feet.

Plectiscus Gravenhorst, Ichn. Europ., ii (1829), 978; Thomson, O. E. xii, 1296.

Head with vertex distinctly transverse; cheeks not buccate; face parallel-sided, glabrous and not apically constricted; clypeus convex and laterally compressed, transversely discreted; lateral metathoracic areæ complete; basal abdominal segment elongately petiolate; areolet distinct and entire, not transverse.

These characters will serve to distinguish the present genus from all others of its Tribe; from *Dicolus*, the areolet renders it distinct.

17. *Plectiscus oceanicus*, sp. n.

A small, nitidulous, black insect with the prothorax, legs except apically and centre of abdomen, pale; hind tibiæ centrally pale banded; areolet entire. Length, 3 mm. ♀ only.

So similar to the last-described species (*Dicolus equatorius*) as to need no detailed description. Therefrom it differs only in its transverse vertex, deeply punctiform notauli of the mesonotum which is not centrally impressed, the deplanate and coriaceous and apically subexplanate basal segment, apically compressed abdomen, longer terebra which is hardly shorter than the abdomen, basally stramineous anterior legs, immaculate testaceous hind femora, centrally stramineous hind tibiæ, small and quadrate alar areolet, and opposite nervellus.

Mahé: a single female was captured in the Mare aux Cochons district, at an altitude of between one and two thousand feet, at the end of January, 1909.

Thersilochus Holmgren, Sv. Ak. Handl., 1858, n. 8, p. 135.

18. *Thersilochus evanescens*, sp. n.

A small black species with the mouth, antennæ basally beneath, and centre of abdomen, pale. Head transverse and closely punctate, subbuccate behind the internally parallel eyes; face somewhat dull and white-pilose, transverse and centrally prominent; clypeus strongly discreted, strongly transverse, elevated with its apex glabrous and, like the mouth, testaceous; cheeks not short. Antennæ somewhat short, hardly extending beyond metathorax, stout and filiform, apically subclavate, with their pale bases broadly separated and scrobes distinct. Thorax short, punctate and somewhat dull, black with the mesopleuræ below radices, and the propleuræ, ferrugineous; notauli wanting; metathorax short and evenly punctate with a single lateral carina, from near the apex of which the discal transcarina extends obliquely to centre of the small basal area. Scutellum black. Abdomen pyriform, nitidulous, with the second and third segments indefinitely testaceous apically, and the compressed anus rufescent; basal segment smooth, elongate, obsoletely punctulate with the postpetiole a third length of petiole and parallel-sided;

terebra distinctly reflexed and hardly shorter than the body. Legs unicolorous pale testaceous with claws minute; inner hind calcar the longer. Wings short and broad, hyaline with the radial cell trapeziform; stigma triangular and pale piceous; basal nervure strongly postfurcal below median; nervures of hind wing apically, and the median basally, wanting; nervellus strongly postfurcal and not intercepted. Length, 3 mm. ♀ only.

Allied to *T. minutus* Bridgm., and smaller than the common palæarctic *T. moderator* Grav., so well known through its attacks on the heteromerous beetle, *Orchesia micans*, Panz., in *Boleti*.

The habits of the present species appear similar, since the type, which alone I have seen, bears Mr Scott's label:—"Bred, together with many Anobiid and other beetles, from a fungus, found in damp jungle, about two thousand feet; Silhouette, 29th July, 1908.—H. S."

No. XIII.—DIPTERA, SCIARIDÆ.

Von Dr. Günther Enderlein, Stettin.

(Tafel **9**, Fig. 1—10.)

Hierzu ein Anhang (p. 192) von Prof. J. J. Kieffer.

(Tafel **9**, Fig. 11—14).

(Mitgeteilt von Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Gelesen den 1. Februar 1912.

Die Sciaridenausbeute von Herrn Hugh Scott in Cambridge (England) enthält 12 Sciariden-Species, die sich auf 5 Gattungen verteilen. 4 dieser Gattungen waren bisher noch unbekannt und zwar *Psectrosciara* Kieff., *Ceratiosciara* Enderl., *Amesicrium* Enderl., *Scythropochroa* Enderl.

Sciara Meig. 1803 (= *Lycoria* Meig. 1800).

1. *Sciara rimiscutellata*, nov. spec. (Tafel **9**, Fig. 1, Flügel ♀).

♂♀. Kopf breit und ziemlich kurz, so breit wie der Thorax. Augenbrücke mässig breit, bei beiden Geschlechtern gleich breit; in der Mitte besonders hinten etwas ausgeschnitten. Scheitel poliert glatt, mit kurzer Pubescenz, beim ♂ ungefähr doppelt so lang, beim ♀ mehr als 3-mal so lang wie die Breite der Augenbrücke. Ocellenhöcker sehr hoch; die hinteren Ocellen gross, Augenabstand 1 Ocellendurchmesser; vorderer Ocellus ein wenig kleiner, Augenabstand ca. $\frac{1}{2}$ Ocellendurchmesser. Fühler mässig dünn und schlank, beim ♂ etwas kräftiger; 1. Fühlerglied so lang wie breit, 2. Glied ein wenig breiter als lang; 1. Geisselglied $2\frac{1}{2}$-mal so lang wie breit, 2.—13. Geisselglied doppelt, 14. ca. 3-mal so lang wie breit, das 14. in der Endhälfte stark zugespitzt. Maxillarpalpus mässig schlank.

Thorax hoch gewölbt, fast so hoch wie lang. Brustkegel halb so hoch wie die Mittelcoxe. Rückenschild poliert glatt, Pubescenz sehr spärlich, sehr kurz und anliegend. Scutellum ziemlich gross, nicht ganz halbkreisförmig, ziemlich stark abstehend, die Oberseite ziemlich eben und mit einigen (ca. 4) ziemlich kräftigen Querriefen. Postscutellum poliert glatt, mässig lang, wenig geneigt und wenig gewölbt. Abdomen beim ♀ kräftig, fast so dick wie der Thorax, von der Mitte ab allmählich zugespitzt; 2. Cercalglied fast kreisrund. Abdomen des ♂ ziemlich schlank; Zange kräftig, so lang wie die 3 letzten Segmente zusammen, 1. Glied mässig schlank oval, 2. Glied ein wenig kürzer und etwas dünner als das 1., in der Endhälfte der Innenseite schräg abgestutzt und hier mit kurzen Dörnchen besetzt. Abdominalpubescenz des ♂ ziemlich lang, dicht und abstehend, auch auf der Zange, des ♀ kurz und spärlicher. Beine sehr schlank, Schienen und Tarsen nur mit sehr kurzer Pubescenz. Fussbörstchen spärlich und kurz. Hintertibiensporne gleichlang, 1. Tarsenglied ca. 5—6-mal so lang.

Flügel kräftig. Die Subcosta endet am Ende der Zelle *R*. *r* (von der Basalquerader ab) ist nur eine Spur kürzer als r_1. r_1 mündet kaum proximal oder ein wenig proximal der Mediangabelung. Mediangabelstiel ist kaum länger als m_1. Mediangabel mässig breit, ziemlich parallel. Die Cubitalgabel ist am Ende $1\frac{4}{5}$ so breit wie die Mediangabel. m_1 nahezu parallel zu *rr*, nur sehr wenig divergierend. Zelle *R* ziemlich schmal; der Basalabschnitt von *rr* steht senkrecht und ist $\frac{1}{5}$ der Radiomedialquerader. Zelle R_1 ziemlich breit, in der Mitte verbreitert und im Basalteil ziemlich schmal. Die Costa endet ungefähr am Ende des 2. Drittels zwischen *rr* und m_1. *rr* ist ein wenig mehr als doppelt so lang wie r_1, etwas ausserhalb der Mitte flach gebogen. r_1 ist fast 3-mal so lang wie die Radiomedialquerader. Der Cubitalgabelstiel ist halb so lang wie die Basalstrecke der Media. Analis und Axillaris enden in der Mitte, scharf ist aber nur eine Strecke bis zum Ende des ersten Drittels. Randpubescenz kurz und dicht. Halteren spindelförmig, Stiel sehr dünn und ebenso lang.

Kopf beim ♂ dunkelrostbraun bis tief schwarz, Scheitel mit sehr starkem Glanz; beim ♀ bräunlich rostgelb bis dunkelrostbraun. Augen schwarz. Ocellen gelblich. Fühler dunkelbraun, die beiden Basalglieder rostgelb. Rückenschild tief schwarz mit starkem Glanz; Scutellum, Postscutellum und der übrige Thorax ziemlich hell rostgelb. Abdomen dunkelbraun, beim ♀ unten ziemlich hell; 1. Zangenglied hell rostgelb, 2. gelblich braun, die Dörnchen am hinteren Innenende schwarz, Abdominalspitze des ♀ schwärzlich; Pubescenz dunkelbraun. Beine mit den Coxen hell rostgelb, Schienen etwas dunkler, Schienenendsporne hell rostgelb. Tarsen schwarz. Flügel hell graubraun, Adern hellbraun, Costa und Radius braun. Membran des ♂ stark besonders blaugrün, des ♀ besonders rotviolett irisierend. Halteren schwarzbraun, Stiel rostgelb.

Körperlänge: ♂ 2,5—2,7 mm. ♀ 2,7—4,2 mm.
Flügellänge: ♂ 2,7—2,8 mm. ♀ 3,5—4,4 mm.
Thorakallänge: ♂ 0,7 mm. ♀ 1—$1\frac{1}{4}$ mm.
Abdominallänge: ♂ 2,1 mm. ♀ 2,1—3 mm.
Fühlerlänge: ♂ ca. 1,8 mm. ♀ 2 mm.
Länge des Hinterschenkels: ♂ 1,1 mm. ♀ 1,3 mm.
Länge der Hinterschiene: ♂ 1,4 mm. ♀ 1,6 mm.
Länge des Hintertarsus: ♂ 1,1 mm. ♀ 1,4 mm.

Vorkommen. Seychellen. Silhouette: Ebene von Mare aux Cochons, und Wald oberhalb, IX. 1908, 2 ♂, 2 ♀; in der Nähe von Mont Pot-à-eau, ungefähr 1500 Fuss hoch, VIII. 1908, 1 ♂, 1 ♀. Mahé: in der Nähe von Morne Blanc, X.—XI. 1908, 1 ♀; Cascade Estate, 800—1500 Fuss hoch, 1908—9, 3 ♂, 5 ♀.

Typen im Museum von London, Stettin und Cambridge.

2. *Sciara seychellensis*, nov. spec. (Tafel **9**, Fig. 2, Flügel ♀).

♀. Kopf so breit wie der Thorax. Augenpubescenz relativ dicht. Augenbrücke mässig breit, Scheitel mässig lang, matt. Fühler etwas dünn und kurz, wenig zugespitzt. Geisselglieder etwa $1\frac{1}{4}$-mal so lang wie dick, nur das Endglied ca. $2\frac{1}{2}$-mal so lang wie dick und stark zugespitzt. Maxillarpalpus mässig schlank.

Thorax sehr hoch gewölbt, ungefähr so hoch wie lang; matt; Pubescenz mässig dicht und mässig kurz. Scutellum hinten kreisförmig gewölbt, oben etwas gewölbt und matt. Postscutellum ziemlich kurz, kaum abfallend aber ziemlich stark gewölbt. Abdomen etwas dünner als der Thorax, Spitzendrittel allmählich zugespitzt; Pubescenz mässig dicht und mässig lang. Beine schlank; Fussbörstchen spärlich und kurz.

Flügel mässig breit. Die Subcosta endet am Ende der Zelle *R*. *r* (von der Basalquerader ab) ist $1\frac{1}{5}$ von r_1. r_1 mündet etwas proximal der Mediangabelung. Der Mediangabelstiel ist kaum länger als m_1. Mediangabel mässig breit, sehr schwach divergierend. Die Cubitalgabel ist am Ende doppelt so breit wie die Mediangabel. m_1 ist parallel zu *rr*. Zelle *R* ist sehr breit; der Basalabschnitt von *rr* ist etwas schräg, und ca. $\frac{1}{4}$ von der Radiomedialquerader. Zelle R_1 breit und fast gleichbreit; Basaldrittel etwas schmäler. Die Costa endet etwas unter dem Ende des 2. Drittels zwischen *rr* und m_1. *rr* ist $2\frac{3}{4}$-mal so lang wie r_1, im dritten Viertel schwach und gleichmässig gebogen. r_2 ist $1\frac{1}{3}$-mal so lang wie die Radiomedialquerader. Der Cubitalstiel ist $\frac{3}{4}$-mal so lang wie die Basalstrecke der Media. Die Analis endet in der Mitte, die Axillaris am Ende des ersten Drittels. Randpubescenz mässig kurz und dicht. Haltere spindelförmig, Stiel dünn und ebenso lang.

Körper einfarbig sehr dunkel braun. Fühler braun, die beiden Basalglieder etwas heller. Maxillarpalpus braun. Beine dunkelbraun, Tarsen schwarz, Schenkel wenig blasser, Vorderschienen etwas heller. Vorderschenkel braungelb. Tibienendsporne gelblich. Flügel ziemlich dunkel russbraun, Adern braun, Costa und Radius schwarzbraun. Membran mässig stark, besonders grün bis rot irisierend. Halteren sehr dunkel braun, Stiel dunkel gelbbraun.

Körperlänge: 2,6—3 mm.
Flügellänge: 3—3,3 mm.
Fühlerlänge: 1,1—1,2 mm.
Länge des Hinterschenkels: 1,4 mm.
Länge der Hinterschiene: 1,6 mm. } bei einem grösseren Exemplar.
Länge des Hintertarsus: 1,4 mm.

Vorkommen. Seychellen. Mahé: Sumpfiges Terrain an der Küste bei Anse aux Pins und Anse Royale, I. 1909, 1 ♀; in der Nähe von Morne Blanc, ungefähr 1000 Fuss, II. 1909, 1 ♀; Cascade Estate, 800—1500 Fuss, 1908—9, 15 ♀; sumpfiges Terrain in der Nähe der See-Ebene, Cascade, II. 1909, 1 ♀.

Typen in Museum von London, Stettin und Cambridge.

3. *Sciara albicoxa*, nov. spec. (Tafel **9**, Fig. 3, Flügel ♀).

♂♀. Kopf so breit wie der Thorax. Augenbrücke mässig breit, die beiden Hälften stumpfwinklig nach vorn convergierend. Scheitel ziemlich kurz, doppelt so lang wie die Breite der Augenbrücke. Ocellen ziemlich gross, der vordere etwas kleiner, in einem flachen Dreiecke angeordnet; Abstand der hinteren vom Augenrande ca. $\frac{1}{4}$ Ocellendurchmesser. Fühler kurz und ziemlich dünn, bei beiden Geschlechtern gleichmässig dünn, nur ist die Endhälfte beim ♂ stärker zugespitzt; 1. Geisselglied doppelt so lang wie

dick, 2.—13. Glied $1\frac{1}{4}$-mal so lang wie dick, das 14. ca. $2\frac{1}{2}$-mal so lang wie dick, stark zugespitzt. Maxillarpalpus mässig schlank.

Thorax hoch gewölbt, so hoch wie lang. Rückenschild matt, mit nur sehr wenigem ganz schwachen Glanz; Pubescenz spärlich und kurz, besonders beim ♂. Parapsidenfurchen scharf. Scutellum mässig kurz, abstehend, gerundet, meistens mit einzelnen abstehenden Haaren. Postscutellum wie das Rückenschild mit schwachem Glanz, mässig kurz, wenig abfallend und mässig stark gewölbt. Abdomen des ♀ ein wenig dünner als der Thorax, wenig zugespitzt, erst das Enddrittel sehr stark zugespitzt. Cerci schlank, Endglied schlank oval. Zange des ♂ schlank und dünn; so lang wie der dritte Teil der Abdominallänge (ausser der Zange). Abdominalpubescenz sehr dicht, mässig lang und struppig (besonders beim ♀). Beine schlank, Pubescenz sehr kurz; Fussbörstchen spärlich und sehr kurz.

Flügel mässig breit. Die Subcosta endet am Ende der Zelle R, ist aber nur im Basalviertel scharf. r (von der Basalquerader ab) ist genau so lang wie r_1. r_1 mündet etwas proximal der Mediangabelung. Mediangabelstiel ist $1\frac{1}{6}$ von m_1. Mediangabel mässig breit, parallel, und sehr schwach nach hinten zu gebogen. Die Cubitalgabel ist am Ende $2\frac{1}{4}$-mal so breit wie die Mediangabel. m_1 von der Mitte ab sehr schwach, mit rr divergierend. Zelle R ist auffällig breit; der Basalabschnitt von rr steht wenig schräg und ist ungefähr $\frac{1}{3}$ der Radiomedialquerader. Zelle R_1 ungewöhnlich breit, und fast gleichbreit, Basalteil etwas schmäler. rr etwas ausserhalb der Mitte flach gebogen und kurz am Ende eine Spur nach vorn gebogen, und $2\frac{1}{3}$-mal so lang wie r_1. Die Costa endet am Ende des 2. Drittels zwischen rr und m_1. r_1 ist $2\frac{1}{4}$ der Radiomedialquerader. Der Cubitalgabelstiel ist $\frac{4}{5}$ des Basalabschnitts der Media. Analis endet in der Mitte, Axillaris am Ende des ersten Drittels. Randpubescenz dicht. Halteren spindelförmig, Stiel ebenso lang.

Kopf und Thorax schwarz, Abdomen dunkel rotbraun bis schwarzbraun. Schulterecken und ein kurzer Saum die Parapsidenfurchen hinauf hell bräunlich gelb. Fühler schwarzbraun, die beiden Basalglieder hell bräunlich gelb. Maxillarpalpus dunkel gelbbraun. Beide schwarzbraun, Tarsen schwarz, Vorderschenkel hell bräunlich gelb, Trochanter schwarzbraun. Coxen schmutzig weisslich. Flügel hell braun. Adern braun, Costa und Radius dunkelbraun. Membran beim ♂ mässig stark in allen Farben, beim ♀ stark besonders rot bis blauviolett irisierend. Halteren schwarzbraun, Stiel gelbbraun.

Körperlänge: ♂ 1,8—2,5 mm. ♀ 2,5—3 mm.
Flügellänge: ♂ 2,1—2,7 mm. ♀ 2,8—3,2 mm.
Fühlerlänge: ♂ 1—1,2 mm. ♀ 1—1,2 mm.
Länge des Hinterschenkels: ♂ $1\frac{1}{4}$ mm. ♀ 1,4 mm.
Länge der Hinterschiene: ♂ 1,7 mm. ♀ 1,8 mm.
Länge des Hintertarsus: ♂ 1,4 mm. ♀ 1,5 mm.

Vorkommen. Seychellen. Mahé: Cascade Estate, 800—1500 Fuss, 1908—9, 14 ♂, 26 ♀; Gebiet von Mare aux Cochons, ungefähr 1500 Fuss hoch, I.—II. 1909, 1 ♂; Anonyme Insel, von Gras, Farnen, Bäumen, etc., und von Seetang (Algen), I. 1909, 2 ♀;

auf sumpfigem Terrain an der See-Ebene, Cascade, II. 1909, 1 ♀; dürre Waldvegetation auf der Spitze des Berges Sebert, 1800 Fuss und höher, I. 1909, 1 ♀; Sumpfgebiet an der Küste bei Anse aux Pins und Anse Royale, I. 1909, 2 ♂, 5 ♀. Félicité Insel, XII. 1908, 1 ♀.

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4. *Sciara biformata*, nov. spec. (Tafel **9**, Fig. 4, Flügel ♂; Fig. 5, Flügel ♀).

♂♀. Kopf fast so breit wie der Thorax. Augenbrücke breit, in der Mitte ein wenig eingeschnürt. Scheitel kurz, beim ♂ ca. $1\frac{1}{2}$-mal so lang wie die Breite der Augenbrücke, beim ♀ ungefähr so lang wie diese oder wenig länger. Ocellen mässig gross, fast gleich gross, der vordere berührt den Augenrand, die hinteren sind beim ♂ ca. $\frac{3}{4}$ beim ♀ ca. $\frac{1}{4}$ Ocellendurchmesser vom Augenrand entfernt. Fühler mässig lang und dünn, beim ♂ lang, Geisselglieder bei beiden Geschlechtern 3—4-mal so lang wie dick. Maxillarpalpus schlank.

Thorax sehr hoch gewölbt, etwas höher als lang. Rückenschild ziemlich matt, mit sehr geringem Glanz; Pubescenz mässig lang und spärlich. Parapsidenfurchen ganz undeutlich. Scutellum mässig gross, gleichmässig gerundet, relativ kurz aber stark überhängend, hinten mit einigen Haaren, 2 davon ziemlich lang, Oberfläche rauh chagriniert, fast querrissig. Postscutellum mässig lang, mässig steil abfallend, gewölbt. Abdomen mässig dünn und schlank, beim ♂ sehr dünn. Das Basalglied der Zange des ♂ ist sehr kräftig, das Endglied kaum halb so dick und meist einwärts eingeschlagen. Die Cerci des ♀ sind sehr klein und dünn, das Endglied fast kreisrund. Abdominalpubescenz mässig dicht und kurz, beim ♂ dichter. Beine schlank, Fussbörstchen kurz.

Flügel mässig breit. Die Subcosta endet in der Mitte vor der Zelle R, aber nur eine kurze Basalstrecke ist scharf. r_1 ist etwas kürzer als r (von der Basalquerader ab). r_1 mündet stark proximal der Mediangabelung. Mediangabelstiel ist so lang, beim ♂ wenig kürzer als m_1. Mediangabel mässig breit, schlank, gerade (ungebogen) und parallel. m_1 ist nahezu parallel zu rr. Die Cubitalgabel ist am Ende doppelt so breit oder fast doppelt so breit wie die Mediangabel. Zelle R ist schmal; der Basalabschnitt von rr ist kurz (ungefähr $\frac{1}{6}$ der Radiomedialquerader) und steht meist nahezu senkrecht zu den beiden Adern. Zelle R_1 ist breit, der Basal ziemlich schmal. rr ist am Ende des 2. Drittels allmählich doch ziemlich kräftig gebogen und ca. 3-mal so lang wie r_1. Die Costa endet etwas über dem Ende des 2. Drittels zwischen rr und m_1. r_1 ist ca. $1\frac{1}{5}$ der Radiomedianquerader. Der Cubitalstiel ist beim ♀ $\frac{3}{4}$, beim ♂ ca. $\frac{5}{6}$ der Basalstrecke (zuweilen auch etwas kürzer) der Media. Analis und Axillaris verschwinden ungefähr in der Mitte. Randpubescenz dicht und mässig kurz. Halteren schlank spindelförmig, Stiel sehr dünn und ebensolang.

Kopf schwarz, Fühler gänzlich braunschwarz, Palpus gelbbraun. Augen schwarz. Thorax dunkel gelblich braun, oben schwarz. Abdomen gelblich braun bis dunkelbraun, erstes Zangenglied des ♂ dunkel gelbbraun. Schienen schwarzbraun, Tarsen schwarz, Coxen und Schenkel hell braungelb. Flügel blass bräunlich grau, Adern hell grau, Costa und Radius grauschwarz. Membran mehr oder wenig irisierend, in der Basalhälfte besonders blau, im Rand besonders messinggelblich, dazwischen besonders rot. Halteren braunschwarz, Stiel hell bräunlich gelb.

Körperlänge: ♂ 2,1—2,7 mm. ♀ 2,6—3,2 mm.
Flügellänge: ♂ 2,6—3,3 mm. ♀ 2,6—3,4 mm.
Fühlerlänge: ♂ ca. 2,5 mm. ♀ 1,5—1,9 mm.
Länge des Hinterschenkels: ♂ 1,4 mm. ♀ 1,3 mm.
Länge der Hinterschiene: ♂ 1,8 mm. ♀ 1,7 mm.
Länge des Hintertarsus: ♂ 1,7 mm. ♀ 1,8 mm.

Vorkommen. Seychellen. Silhouette: Ebene von Mare aux Cochons und dichtes Gebüsch in der Nähe davon, VIII. 1908, 1 ♂; Wald oberhalb von Mare aux Cochons, IX. 1909, 2 ♂, 5 ♀; höchster Wald, über 2000 Fuss, VIII. 1908, 5 ♂. Mahé: Hochwald von Morne Blanc und Pilot, X.—XI. 1908, 2 ♂, 2 ♀; Wald von ziemlich verkrüppelten Capucin-Bäumen (*Northea*), Gipfel von "Montagne Anse Major," ungefähr 2000 Fuss, II. 1909, 1 ♂, 7 ♀; Gebiet von Mare aux Cochons, ungefähr 1500 Fuss, I.—II. 1909, 1 ♀.

Typen im Museum von London, Stettin und Cambridge.

Diese Species zeichnet sich dadurch aus, dass die ♂ eine sehr langgestielte Cubitalgabel, längere Fühler und längere und schlankere Beine als die ♀ besitzen. Der Cubitalgabelstiel des ♂ ist nahezu so lang wie die Basalstrecke der Media.

5. *Sciara nigriceps*, nov. spec. (Tafel **9**, Fig. 6, Flügel ♀).

♂♀. Kopf so breit wie der Thorax, beim ♂ ein wenig breiter, quer rundlich und mässig klein. Augenbrücke mässig schmal, die beiden Hälften nach vorn einen ganz flachen Winkel bildend. Scheitel mässig lang, ca. $2\frac{1}{2}$- beim ♂ fast 3-mal so lang wie die Breite der Augenbrücke. Ocellen mässig klein, ziemlich hoch stehend, der vordere Ocellus kleiner, die hinteren stehen kaum 1 Ocellendurchmesser vom Augenrand ab, der vordere ist stark genähert. Fühler lang, beim ♀ ziemlich dünn, beim ♂ etwas stärker und mit längerer Pubescenz; die Geisselglieder 3—4-mal so lang wie dick, beim ♂ sind die beiden ersten nur ca. 2-mal so lang wie dick. Maxillarpalpus ziemlich lang.

Thorax so hoch wie lang, aber der Kopf wenig abwärts gerückt. Rückenschild matt; Pubescenz nur auf 3 mittleren Längsstreifen, kräftig und mässig lang; an den Seitenlinien ausserdem eine lange, kräftige Behaarung. Scutellum lang, in der Mitte kräftiger gerundet wie an den Seiten; hinten behaart. Postscutellum mässig kurz, etwas abfallend und gewölbt. Abdomen des ♀ lang, weniger hoch als der Thorax, aber ungefähr so breit, die Seiten fast parallel und erst im Endfünftel zugespitzt und in eine lange Spitze ausgezogen; Cerci klein, Endglied fast kreisrund; Pubescenz lang, dicht und etwas anliegend. Abdomen des ♂ kürzer, sehr dünn, wenig zugespitzt, Zange sehr klein und dünn, nicht länger als das letzte Abdominalsegment; Pubescenz wie beim ♀. Beine lang und schlank, Pubescenz fast verschwindend, Fussbörstchen mässig kurz.

Flügel mässig breit. Die Subcosta endet in der Mitte vor der Zelle *R*, aber nur ein kurzer Basalteil ist scharf. *r* (von der Basalquerader ab) ist so lang wie r_1. r_1 mündet etwas proximal der Mediangabelung, und ist $1\frac{1}{2}$ der Radiomedialquerader. Der Mediangabelstiel ist ein wenig kürzer als m_1. Die Mediangabel ist schlank, gerade, parallel und m_1 parallel zu *rr*. Die Cubitalgabel ist am Ende ungefähr doppelt so breit wie die Mediangabel. Zelle *R* ist sehr schmal; der Basalabschnitt von *rr* steht senkrecht zu

den beiden Ästen, ist sehr kurz und ist ungefähr $\frac{1}{6}$ der Radiomedianquerader. Zelle R_1 breit, nach dem Ende zu etwas verschmälert, Basalteil sehr schmal. rr ist im Verlauf des 3. Viertels allmählich gebogen und fast 3-mal so lang wie r_1. Die Costa endet am Ende des 3. Fünftels zwischen rr und m_1. Der Cubitalgabelstiel ist nicht viel kürzer als der Basalabschnitt der Media. Die Mitte wird von der Analis erreicht, von der Axillaris nicht erreicht. Haltere kräftig spindelförmig, Stiel ziemlich dick.

Kopf und Augen schwarz. Fühler dunkelbraun, Maxillarpalpus bräunlich. Thorax hell rostgelb mit je einem schwärzlichen Längsstreifen seitlich der Mitte und je einem an den Seiten des Rückenschildes; in der Mitte ist eine sehr feine Medianlinie. Abdomen hell rostgelb, oben dunkler. Beine hell bräunlich gelb, Schienen etwas dunkler, Tarsen dunkelgrau. Flügel blassgrau, Adern hellbraun, Costa und Radius dunkelbraun. Membran stark irisierend, Ausserrandzone grünlich gelb. Halteren bräunlich, Stiel blass gelblich.

Körperlänge: ♂ 2—2,5 mm. ♀ 2—2,9 mm.
Flügellänge: ♂ 2,5—2,6 mm. ♀ 2,4—2,8 mm.
Fühlerlänge: ♂ ca. 1,9 mm. ♀ ca. 1,8 mm.
Länge des Hinterschenkels: ♂ ca. 1,1 mm. ♀ 1,1 mm.
Länge der Hinterschiene: ♂ 1,5 mm. ♀ 1,4 mm.
Länge des Hintertarsus: ♂ 1,6 mm. ♀ 1,6 mm.

Vorkommen. Seychellen. Silhouette: in der Nähe von Mont Pot-à-eau, ungefähr 1500 Fuss hoch, VIII. 1908, 2 ♂, 1 ♀. Mahé: Gebiet von Mare aux Cochons, 1000 bis 2000 Fuss, I.—II. 1909, 1 ♀; Hochwald von Morne Blanc und Pilot, X.—XI. 1908, 5 ♂; in der Nähe von Morne Blanc, X.—XI. 1908, 6 ♂, 1 ♀; Wald von ziemlich verkrüppelten Capucin-Bäumen (*Northea*), Gipfel von "Montagne Anse Major," ungefähr 2000 Fuss, II. 1909, 8 ♂, 5 ♀; Cascade Estate, 800—1500 Fuss, 1908—9, 12 ♂, 6 ♀; Wald hinter Trois Frères, ungefähr 2000 Fuss, I. 1909, 3 ♂, 2 ♀.

Typen im Museum von London, Stettin und Cambridge.

6. *Sciara divergens*, nov. spec. (Tafel **9**, Fig. 7, Flügel ♀).

♂♀. Kopf so breit wie der hintere, breitere Teil des Thorax, beim ♂ ein wenig breiter; etwas quer. Augenbrücke schmal, Scheitel kurz. Fühler ziemlich lang und ziemlich dick, beim ♀ wesentlich dünner; die Geisselglieder beim ♀ ca. doppelt, beim ♂ ca. $1\frac{2}{3}$-mal so lang wie breit. Maxillarpalpus schlank, das Endglied sehr lang.

Thorax sehr gewölbt, etwas höher als lang; Brustkegel sehr hoch und ziemlich schmal. Rückenschild wenig stark glatt, Pubescenz ziemlich spärlich und lang. Scutellum mässig lang, hinten gleichmässig gerundet. Hinterrand ziemlich lang behaart, im mittleren Teil mit 4 langen Haaren. Postscutellum mässig lang, etwas abfallend und gewölbt. Abdomen des ♂ mässig dünn, beim ♀ etwas dicker und allmählich zugespitzt; Cerci des ♀ nicht sehr klein, Endglied etwas lang oval; Pubescenz kräftig und mässig lang. Zange des ♂ sehr schlank und das Endglied sehr lang und dünn. Beine schlank, Fussbörstchen mässig kurz.

Flügel mässig breit, die Subcosta endet am Ende der Zelle R, scharf ist aber nur etwa die Hälfte. r (von der Basalquerader ab) ist ein wenig länger als r_1. r_1 mündet

stark proximal der Mediangabelung, und ist doppelt so lang wie die Radiomedialquerader. Der Mediangabelstiel ist $1\frac{1}{6}$ von m_1. Die Mediangabel ist etwas breit, stark nach hinten gerichtet, parallel oder nur am Ende durch eine schwache Aufbiegung von m_1 wenig verbreitert. Die zwei Enddrittel von m_1 sind stark mit rr divergierend, wenn m_1 ganz gerade ist dann noch etwas stärker als in der Figur wiedergegeben. Die Cubitalgabel am Ende ungefähr $1\frac{1}{2}$-mal so breit wie die Mediangabel. Zelle R ist mässig schmal und relativ kurz. Der Basalabschnitt von rr steht senkrecht zu den beiden Ästen, ist mässig kurz, und ist ungefähr $\frac{1}{4}$ der Radiomedianquerader. Zelle R_1 breit, Basalteil allmählich mässig stark verschmälert. rr ist ziemlich gerade, nur ein wenig ausserhalb des Endes des 2. Drittels sehr schwach gebogen und fast 3-mal so lang wie r_1. Die Costa endet am Ende des 2. Drittels zwischen rr und m_1. Der Cubitalgabelstiel ist $\frac{3}{4}$ des Basalabschnittes der Media. Die Mitte wird von der Analis etwas überschritten, von der Axillaris etwa erreicht. Haltere schlank, spindelförmig, Stiel dünn und ebenso lang wie der Knopf.

Kopf und Augen schwarz, Fühler und Palpus braunschwarz. Thorax etwas glänzend dunkelbraun. Beine braun, Vorderschenkel und alle Coxen blassbraun. Schienenendsporne gelblich. Haltere schwarzbraun, Stiel gelblich. Flügel blassbraun, Adern hellbraun, Costa und Radius braun.

Körperlänge: ♂ 1,4—1,5 mm. ♀ 1,7—2,2 mm.
Flügellänge: ♂ 1,8—1,9 mm. ♀ 2,2—2,5 mm.
Fühlerlänge: ♂ ca. 1,5 mm. ♀ ca. 1,2 mm.
Länge des Hinterschenkels: ♂ 0,8 mm. ♀ 1,1 mm.
Länge der Hinterschiene: ♂ 1 mm. ♀ 1,5 mm.
Länge des Hintertarsus: ♂ 0,9 mm. ♀ 1,3 mm.
} bei einem grossen Exemplar.

Vorkommen. Seychellen. Silhouette: in der Nähe von Mont Pot-à-eau, VIII. 1908, 1 ♀; Wald oberhalb von Mare aux Cochons, IX. 1908, 3 ♂, 2 ♀. Mahé: Hochwald von Morne Blanc und Pilot, X.—XI. 1908, 2 ♀; in der Nähe von Morne Blanc, X.—XI. 1908, 1 ♀; Cascade Estate, 800—1500 Fuss, 1908—9, 10 ♂, 21 ♀; sumpfiges Terrain in der Nähe der See-Ebene, Cascade, II. 1909, 1 ♀.

Typen in Museum von London, Stettin und Cambridge.

(11)*. *Sciara mahensis* Kieffer (Tafel **9**, Fig. 8, Flügel ♀).

Von dieser Species liegen ausser 3 Typen folgende Exemplare vor:

Seychellen. Silhouette: Ebene von Mare aux Cochons und dichtes Gebüsch in der Nähe, VIII. 1908, 1 ♀; Wald oberhalb von Mare aux Cochons, X. 1908, 1 ♂, 6 ♀; in der Nähe von Mont Pot-à-eau, ungefähr 1500 Fuss hoch, VIII. 1908, 2 ♀ (davon 1 Type). Mahé: Gebiet von Mare aux Cochons, 1000—2000 Fuss, I.—II. 1909, 3 ♂; Cascade Estate, 800—1500 Fuss, 1908—9, 2 ♂, 18 ♀ (davon 2 Typen); Anonyme Insel, von Gras, Farnen, Bäumen, etc., I. 1909, 1 ♀.

(12)*. *Sciara leucocera* Kieffer (Tafel **9**, Fig. 9 und 11, Flügel ♂ und Zangenglied).

Es liegen folgende Exemplare vor:

Seychellen. Mahé: Cascade Estate, 800—1500 Fuss, 1909, 6 ♂ (davon 2 Typen).

* The numbers of this species and the next (11 and 12) refer to descriptions in the "Anhang" by J. J. Kieffer, p. 193.—H. Scott.

Scythropochroa, Enderl. 1911.

Enderlein, Arch. f. Naturg. 1911, i. 3. Suppl. p. 138.

Typus: *Scythropochroa latefurcata*, Enderl. 1911. Seychellen.

Mediangabelstiel entspringt in der Mitte der Zelle *R*. Die Querader zwischen *rr* und *m* mehrfach länger als der Basalabschnitt von *rr*. Mediangabel normal. Cubitalgabelung distal von dem Insertionspunkt des Mediangabelstieles. Die beiden Cubitaläste divergieren von der Gabelung ab sogleich stark bis sehr stark und laufen nicht erst eine mehr oder weniger lange Strecke wenig divergierend neben einander wie bei *Sciara*. Coxen sehr lang. Palpus ausser dem nicht sehr scharf von der Basis abgesetzten Trochanter nur noch mit einem einzelnen grossen und kräftigen Glied.

7. *Scythropochroa latefurcata*, Enderl. 1911.

♀. Kopf mässig gross, so breit wie der Thorax. Scheitel kurz, ziemlich glatt. Die hinteren Ocellen ziemlich gross, ihr Abstand von einander ungefähr gleich dem eigenen Durchmesser; der vordere Ocellus etwas kleiner, eine Tangente am Vorderrand der hinteren Ocellen schneidet den vorderen Ocellus in der Mitte. Augenbrücke mässig schmal, in der Mitte völlig verschmolzen und ohne Einschnürung. Fühler kurz, mässig dünn, kaum länger als $\frac{1}{3}$ der Flügellänge; die beiden Basalglieder so lang wie breit, die Geisselglieder so lang wie breit, die der Spitzenhälfte etwas länger. Pubescenz fein, mässig kurz und ziemlich dicht. Gesicht sehr schmal, ca. $2\frac{1}{2}$-mal so lang wie vorn breit, hinten etwas verbreitert.

Thorax wenig gewölbt; Brustkegel breit und fast rechtwinklig, Spitze abgerundet. Rückenschild glatt; Pubescenz sehr fein, an den Seiten lang und kräftig. Scutellum kurz und breit, hinten gerundet, Behaarung ziemlich dicht und lang. Postscutellum ziemlich lang, glatt, flach und wenig gewölbt. Abdomen lang, so dick wie der Thorax, von der Mitte ab allmählich zugespitzt. Legerohr sehr dünn und lang; 2. Cercalglied langoval. Beine nicht lang aber ziemlich dünn. Coxen lang und schlank. Hintercoxen etwas dicker und kürzer. Schienenborsten oben sehr kurz und fein, in einer ziemlich dichten Längsreihe, bei der Mittelschiene sehr spärlich, bei der Vorderschiene fast fehlend. Fussbörstchen kurz und spärlich. 1. Hintertarsenglied ca. $3\frac{1}{2}$-mal so lang wie der längere Hintertibiensporn.

Flügel etwas schlank. Die Subcosta erreicht das Ende der Radialzelle *R*, das Enddrittel ist aber sehr fein und undeutlich. r_1 eine Spur länger als m_{1+2}. Mediangabelstiel $1\frac{1}{2}$ von m_{1+2}, Mediangabel relativ kurz und breit, Cubitalgabel am Ende nur $1\frac{1}{3}$ so breit wie sie. Radiomedianquerader $\frac{1}{3}$ des Mediangabelstieles und 3-mal so lang wie der Basalabschnitt von *rr*. Zelle R_1 sehr schmal, Endhälfte breiter, r_1 in der Mitte sehr schwach umgebogen. Die Randader erreicht fast das Ende des 4. Fünftels der Entfernung zwischen *rr* und m_1. Die Cubitalgabelung liegt etwas distal von der Basis des Mediangabelstieles. Randbehaarung mässig lang. Microtrichen sehr dicht und mässig lang. Haltere schlank spindelförmig, Stiel mässig lang und mässig dünn.

Kopf braunschwarz, Augen schwarz, Fühler dunkel gelblich braun. Ocellen braungelb. Thorax dunkelbraun. Abdomen dunkel gelblich braun, unten braungelb; Legerohr und die Cerci schwarz, Beine mit den Coxen hell braungelb, Tarsen schwärzlich,

Flügel schwärzlich grau; Adern gelbbraun, *c*, *r* und *rr* mehr schwärzlich. Membran stark violett bis grün irisierend. Halteren schwarzbraun; Stiel braungelb.

Körperlänge: $2\frac{1}{4}$—$3\frac{1}{2}$ mm.
Flügellänge: $2\frac{3}{4}$—3 mm.
Thorakallänge: 0,9—1 mm.
Abdominallänge: 1,7—2,5 mm.
Fühlerlänge: 1 mm.
Länge des Hinterschenkels: 0,8 mm.
Länge der Hinterschiene: 1,2 mm. } bei den grössten Exemplaren.
Länge des Hintertarsus: 1,1 mm.

Vorkommen. Seychellen. Mahé: Cascade Estate, 800—1500 Fuss, X. 1908—I. 1909, 5 ♀; Gebiet von Mare aux Cochons, ungefähr 1500 Fuss hoch, I.—II. 1909, 1 ♀.

Typen im Museum von London, Stettin und Cambridge.

Amesicrium, Enderl. 1911.

Enderlein, Arch. f. Naturg. 1911, i. 3. Suppl. p. 128.

Typus: *Amesicrium nanum*, Enderl. 1911. Seychellen.

Sehr kleine Form. Media und Cubitus sind durch ziemlich breite grauschwärzliche Linien dargestellt, die keine scharfen Conturen aufweisen. Die Media ist nicht gegabelt sondern einfach. Sonst wie *Sciara*.

8. *Amesicrium nanum*, Enderl. 1911.

♀. Kopf und Augen schwarz. Fühler gelblich schwarzgrau mit weisslichgrauer Pubescenz, mässig dünn, die Geisselglieder etwas länger als breit. Augenbrücke ziemlich schmal. Kopf relativ gross.

Thorax mässig gewölbt, schwarz. Abdomen schwarzbraun, lang und ziemlich dünn, allmählich zugespitzt, Legerohr schlank, Endglied der Cerci oval. Beine fein behaart, Coxen gelblich schwarzgrau, Trochanter und Schenkel hellgrau gelblich; Schienen grauschwarz, Tarsen schwarz.

Flügel grau, Microtrichen kurz und dicht. Randpubescenz sehr lang, am Vorderrand dichter. r_1 und *rr* sind schwärzlich, scharf, deutlich doppelt contouriert. Media und Cubitus als ziemlich breite deutliche graue Linien, die aber keine scharfen Conturen aufweisen. Der als Querader erscheinende Basalabschnitt von *rr* mässig scharf. Die Randader erreicht nicht ganz die Mitte zwischen *rr* und *m*. Die Zelle *RR* sehr breit. Die Cubitalgabel in der Endhälfte sich sehr stark verbreiternd. Cubitalgabel mässig kurz, ca. 3-mal so lang wie der Basalabschnitt von *rr*. Analis bis zur Mitte von m_2 reichend. Axillaris etwas kürzer. Membran schwach rot bis blau irisierend.

Körperlänge: 1,1 mm.
Flügellänge: 1,05 mm.
Länge der Hinterschiene: 0,68 mm.

Vorkommen. Seychellen. Mahé: Wald von ziemlich verkrüppelten Capucin-Bäumen (*Northea*), auf dem Gipfel von "Montagne Anse Major," ungefähr 2000 Fuss, 1. II. 1909, 1 ♀ (im Museum von London).

CERATIOSCIARA, Enderl. 1911.

Enderlein, Arch. f. Naturg. 1911, i. 3. Suppl. p. 183.

Typus: *Ceratiosciara corniculata*, Enderl. 1911. Seychellen.

Tafel **9**, Fig. 10, Maxillarpalpus.

Geäder wie bei *Sciara*. Maxillarpalpus (ausser dem reducierten Trochanter) 1-gliedrig. Fühler ungewöhnlich kurz (ca. $\frac{1}{4}$ der Flügellänge); die Geisselglieder ungewöhnlich kurz, mit Ausnahme der 2 ersten Glieder und des Endgliedes bei vorliegender Species fast nur halb so lang wie breit. Klauen ungezähnt. Augen unbehaart. Auch im weiblichen Geschlecht geflügelt (im Gegensatz zu *Dasysciara*, *Mycosciara* und *Aptanogyna*). Das ♂ liegt nicht vor.

9. *Ceratiosciara corniculata*, Enderl. 1911 (Tafel **9**, Fig. 10, Maxillarpalpus).

♀. Kopf rundlich, so weit wie der Thorax. Scheitel ziemlich lang, ca. 4—5-mal so lang wie die Breite der schmalen Augenbrücke. Ocellen sehr klein, der vordere winzig klein, nur als winziges Pünktchen bei 30—60-facher Vergrösserung erkennbar; der vordere Ocellus wird hinten von der Tangente an den Vorderrand der hinteren Ocellen tangiert; der Abstand der beiden hinteren Ocellen ist ca. 2 Ocellendurchmesser, der Abstand vom Augenrand etwas mehr als 3 Ocellendurchmesser, und ihre Stellung ist wenig vor der Mitte der Scheitellänge. Fühler sehr kurz ca. $\frac{1}{4}$ der Flügellänge; 1. Basalglied wenig länger als breit; 2. Basalglied und die 2 ersten Geisselglieder so lang wie breit, 3. bis 13. Geisselglied $1\frac{1}{2}$- fast 2-mal so breit wie lang; 14. Geisselglied doppelt so lang wie breit und am Ende abgerundet. Fühlerbehaarung kurz und relativ kräftig. Maxillarpalpus eingliedrig, mit ziemlich dünnem Stiel, nach dem Ende zu stark keulig verdickt; auf der Unterseite nach dem Ende zu mit 4 Borstenhaaren; die ganze Oberfläche sonst mit feinen, mässig langen Microtrichen sehr dicht besetzt.

Thorax hochgewölbt und vorn ein wenig über den Kopf ragend und so lang wie hoch. Kopf sehr tief unten am Thorax eingelenkt. Behaarung wenig dicht, fein und kurz. Brustkegel fast das Ende der Coxen erreichend. Scutellum breit und mässig lang, hinten gleichmässig flach gerundet. Postscutellum nicht länger als das Scutellum, kaum gesenkt und sehr wenig gewölbt. Abdomen schlank, allmählich verjüngt, ein Stück der Spitze sehr dünn und spitz. Cercus ziemlich gedrungen, erstes Glied so lang wie breit, 2. Glied oval. Beine mässig schlank, Pubescenz kurz, Fussbörstchen fehlen.

Flügel ziemlich zart; Microtrichen sehr kurz. Die Subcosta erstreckt sich fast bis zur Basis von rr_1 aber nur das Basaldrittel ist scharf. r ist ca. $1\frac{1}{3}$ von r_1 und mündet stark proximal von der Mediangabelung etwa in der Mitte des Vorderrandes. Der Mediangabelstiel ist nahezu $1\frac{1}{2}$ von m_1. Mediangabel ziemlich breit und kurz, die Äste ziemlich gleichmässig und mässig stark divergierend. Die Cubitalgabel am Ende $1\frac{2}{3}$ so breit wie die Mediangabel. Zelle R sehr schmal und parallel. rr ziemlich gerade, in der Mitte sehr seicht und wenig deutlich gebogen. Zelle R_1 ziemlich breit, in der Mitte am breitesten, Basalteil sehr schmal. Cubitalgabelstiel etwas länger als halb so lang wie der Basalabschnitt der Media. r_1 ca. $2\frac{1}{2}$-mal so lang wie die Radiocubitalquerader. rr ca. $2\frac{3}{4}$ von r_1. Die Costa endet am Ende des 4. Fünftels zwischen rr und m_1.

Randpubescenz dicht und kurz, am Hinterrand weniger dicht. Halteren nicht sehr lang aber mit breitem abgeflachten (Discus-artigen) ovalen grossen Kopf und ebensolangem mässig dünnen Stiel.

Kopf schwarzbraun. Fühler und Maxillarpalpus blass schmutzig gelb. Thorax rostgelb bis rostbraun. Abdomen hell schmutzig gelb mit schwarzbrauner Spitze bis schwarzbraun (letztere Farbe wohl durch Schrumpfung erzeugt). Beine blass schmutzig gelb, Klauen gelblich. Flügel blass grau, Adern hell grau, Costa etwas dunkler, Radius schwärzlich. Membran sehr schwach rötlich bis bläulich irisierend; bei einzelnen Exemplaren ist dieser Glanz etwas stärker.

Körperlänge: 1,6—1,8 mm.
Flügellänge: ca. 2,1 mm.
Länge des Hinterschenkels: 0,6 mm.
„ der Hinterschiene: 0,6 mm.
„ des Hintertarsus: 0,42 mm.
„ „ 1. Hintertarsengliedes: 0,18 mm.
„ „ 2. „ 0,08 mm.
„ „ 3. „ 0,04 mm.
„ „ 4. „ 0,05 mm.
„ „ 5. „ 0,08 mm.

Vorkommen. Seychellen. Silhouette: Mare aux Cochons, IX. 1908, 1 ♀. Mahé: Cascade Estate, 1909, 5 ♀.

Typen im Museum von London, Stettin und Cambridge.

Psectrosciara Kieffer.

(10)*. *Psectrosciara mahensis* Kieffer (Tafel **9**, Fig. 12—14).

Es liegen folgende Exemplare vor:

Seychellen. Mahé: Cascade Estate, 800—1500 Fuss, X. 1908—III. 1909. 2 Ex., davon 1 Type (Kieffer's).

Kieffer stellt diese Gattung zu den Sciariden und ich stellte sie in Arch. f. Naturg. 1911, i. 3. Suppl. p. 192 zu den Lestremiinen; letztere Publication erschien leider früher, als die vorliegende viel früher im Manuscript abgeschlossene Arbeit.

ANHANG.

Beschreibung neuer Sciariden von den Seychellen-Inseln.

Von Prof. Dr. J. J. Kieffer (Bitsch).

(Tafel **9**, Fig. 11—14.)

Psectrosciara, nov. gen.

Augen kahl. Palpen kurz, eingliedrig. Antennen kurz, 2 + 14-gliedrig. Geisselglieder meist kürzer als breit. Flügel ohne längere Behaarung, nur mikroskopisch fein beborstet; Cubitus von der Costalis nicht überragt. Empodium lang, breit, vielteilig,

* This number refers to Kieffer's description in the "Anhang," p. 193.—H. Scott.

wenigstens so lang wie die Krallen, welche einfach sind; Pulvillen fehlend. Mundteile aus 2 lanzettlichen, am Ende abgestutzten oder ausgerandeten, schwach chitinösen und fast kahlen Lappen zusammengesetzt.

10. *Psectrosciara mahensis*, nov. spec. (Tafel **9**, Fig. 12, Flügel ♀; Fig. 13, Endglied des Vordertarsus; Fig. 14, Analanhänge).

♀. Ganz schwarzbraun. Die beiden ersten Antennenglieder etwas dicker als die folgenden; 3.—7. etwas quer; 8.—15. so lang wie dick; 16. dreimal so lang wie das vorletzte; alle anliegend und fein behaart. Thorax wie bei *Sciara*. Flügel (Fig. 12) glashell, mikroskopisch fein beborstet; Radius das proximale Flügeldrittel nicht überragend, in seiner Mitte, durch eine Querader, mit dem Cubitus verbunden; Cubitus fast gerade, von der Costalis nicht überragt, ihre Mündung von der Flügelspitze weit entfernt; Discoidalis an der Querader entspringend, in ihrer Mitte gegabelt, hintere Zinke gerade, die Richtung des Stieles fortsetzend, die vordere proximal stark nach vorn gebogen, vor der Flügelspitze mündend; Posticalis fast am Grunde gegabelt, ihre Zinken schwach bogig, die vordere den Flügelrand nicht erreichend; Analader kurz, stark gebogen. Beine ohne lange Behaarung; Sporen kurz; Metatarsus aller Beine etwas länger als die zwei folgenden Glieder zusammen, 2. Glied fast doppelt so lang wie dick; 4. kaum länger als dick, wenig kürzer als das 3.; Endglied dem 3. gleich; Krallen stark gebogen, schlank und einfach; Empodium wenigstens so lang wie die Krallen, vielteilig, jeder Teil fadenförmig und glashell, ventral mit langen Haaren (Fig. 13). Analsegment dorsal ohne die gewöhnlichen Lamellen, aber mit einen bogig nach unten gekrümmten Anhang, welcher vor dem Ende eingeschnürt ist, ventral mit zwei einfachen, dreieckigen und kurz bewimperten Fortsätzen (Fig. 14). Länge: 1,5 mm.

Vorkommen. Seychellen. Mahé: Cascade Estate, ungefähr 800 Fuss, 1 ♀.

Sciara.

11. *Sciara mahensis*, nov. spec. (Tafel **9**, Fig. 8, Flügel ♀).

♀. Schwarzbraun, Femora bräunlich. Palpenglieder allmählich länger. Antennen distal dünner; Flagellumglieder walzenförmig, doppelt so lang wie dick, stielartige Einschnürung am Distalende quer, Haare kürzer als die Dicke der Glieder. Flügel (Fig. 8) dunkel, mikroskopisch fein beborstet; Geäder wie bei voriger Art. Femora mehr als doppelt so lang wie die Tibien; Metatarsus 2—3-mal so lang wie das 2. Glied, dieses wenig länger als das 3.; 3.—5. gleichlang, doppelt so lang wie dick; mittlerer Tarsus kaum kürzer als die Tibien, hintere Tibien um die Hälfte länger als der Tarsus; Krallen einfach; ohne deutliches Empodium; Behaarung der Beine kurz, anliegend, dicht und borstenartig. Abdomen hinten allmählich dünner, Analsegment mit zwei zweigliedrigen Lamellen, unter denen ein Paar kleinerer Fortsätze hervorragt. Länge: 1,5 mm.

Vorkommen. Seychellen. Silhouette: in der Nähe von Mont Pot-à-eau, 1500 Fuss, VIII. 1908. Mahé: Cascade Estate, 800—1500 Fuss, 1908—9, 2 Ex.

12. *Sciara leucocera*, nov. spec. (Tafel **9**, Fig. 9, Flügel ♂; Fig. 11, Zangenglied).

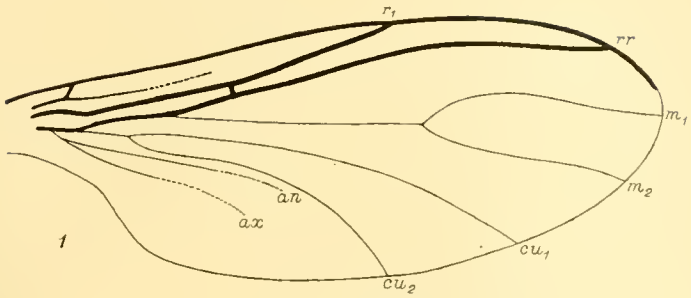
♂. Gelb; Scheitel, distale Hälfte der Antennen, Tibien, Tarsen und Oberseite des

Abdomens, ausgenommen hellere und wenig abgegrenzte Querbinden, schwarzbraun; proximale Hälfte der Antennen gelblichweiss; Coxen und Femora weisslich. Augen fein behaart, oben weit von einander abstehend; Ocellen ein Dreieck bildend. Palpen 3-gliedrig, 1. und 2. Glied ziemlich gleich, 2—3-mal so lang wie dick, 3. etwas länger, proximal verengt. Antennen dick, 2 + 14-gliedrig, distal allmählich dünner; Flagellumglieder walzenförmig, 2—3-mal so lang wie dick, am Distalende mit einer stielartigen Einschnürung, welche ein $\frac{1}{4}$ oder $\frac{1}{3}$ ihrer Länge erreicht, Haare kürzer als die Dicke der Glieder, auf der einen Seite der Glieder, auf 4—6 queren, parallelen und leistenartigen Verdickungen stehend, auf der anderen Seite dichter und ohne Leisten. Flügel glashell, mikroskopisch fein beborstet (Fig. 9); Radius in die Flügelmitte mündend, hinter dem 2. Drittel, mit dem Cubitus durch eine Querader verbunden; Cubitus, in der Mitte, schwach nach vorn gebogen, weit vor der Flügelspitze mündend, von der Costalis weit überragt, diese fast in die Flügelspitze mündend; Discoidalis ziemlich weit proximal von der Querader entspringend, distal von der Mitte gegabelt, beide Zinken gleichmässig von der Richtung des Stieles abbiegend, dann parallel, die obere kaum hinter die Flügelspitze mündend; Posticalis ziemlich nahe am Grunde gegabelt, beide Zinken schwach bogenförmig; Analader unvollständig und fast gerade. Femora mehr als doppelt so dick wie die Tibien; Sporen kurz und gezähnelt; 1. und 2. Tarsenglied gleich, 4-mal so lang wie dick; das 3. wenig kürzer als das 2.; das 4. dem 5. gleich, doppelt so lang wie dick; Krallen einfach; ohne deutliches Empodium. Zange (Fig. 11) gross, wenigstens ein Drittel der Länge des Abdomens erreichend; Endglied $2\frac{1}{2}$-mal so lang wie dick, am Grunde dünner, am Distalende innen mit einem Büschel schwarzer Borsten. Länge: 1,5 mm.

Vorkommen. Seychellen. Mahé: Cascade Estate, 800—1500 Fuss, 1909, 2 ♂.

ERKLÄRUNG DER TAFEL 9.

Fig. 1. *Sciara rimiscutellata*, n. sp. (Enderl.) ♀, Flügel × 25.
Fig. 2. *Sciara seychellensis*, n. sp. (Enderl.) ♀, Flügel × 25.
Fig. 3. *Sciara albicoxa*, n. sp. (Enderl.) ♀, Flügel × 25.
Fig. 4. *Sciara biformata*, n. sp. (Enderl.) ♂, Flügel × 25.
Fig. 5. *Sciara biformata*, n. sp. (Enderl.) ♀, Flügel × 25.
Fig. 6. *Sciara nigriceps*, n. sp. (Enderl.) ♀, Flügel × 25.
Fig. 7. *Sciara divergens*, n. sp. (Enderl.) ♀, Flügel × 25.
Fig. 8. *Sciara mahensis*, n. sp. (Kieffer) ♀, Flügel × 53.
Fig. 9. *Sciara leucocera*, n. sp. (Kieffer) ♂, Flügel × 53.
Fig. 10. *Ceratiosciara corniculata*, n. g. et n. sp. (Enderl.) ♀, Maxillarpalpus.
Fig. 11. *Sciara leucocera*, n. sp. (Kieffer) ♂, Zangenglied.
Fig. 12. *Psectrosciara mahensis*, n. g. et n. sp. (Kieffer) ♀, Flügel.
Fig. 13. *Psectrosciara mahensis*, n. g. et n. sp. (Kieffer) ♀, Endglied des Vordertarsus.
Fig. 14. *Psectrosciara mahensis*, n. g. et n. sp. (Kieffer) ♀, Analanhänge.



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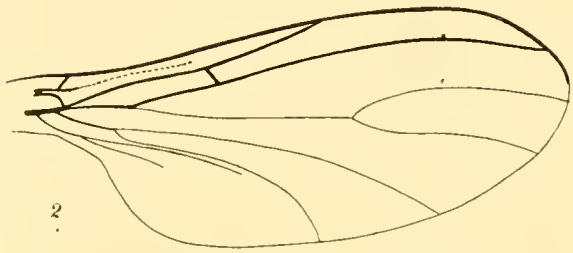

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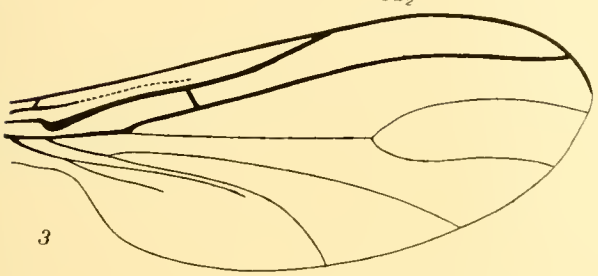

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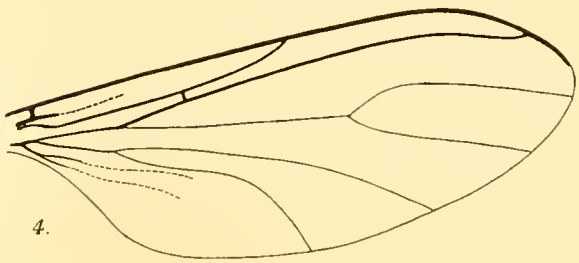

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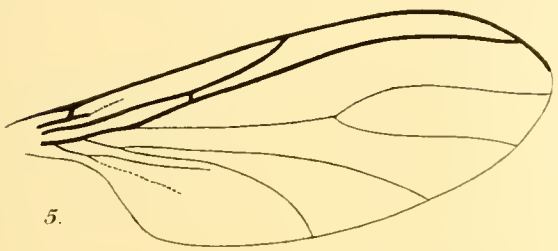

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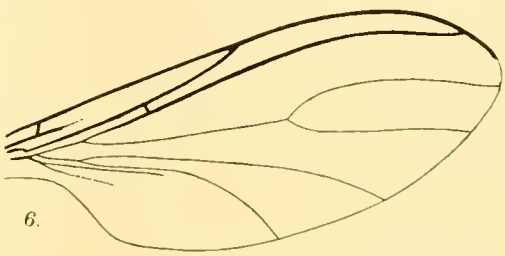

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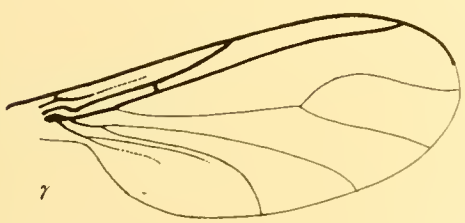

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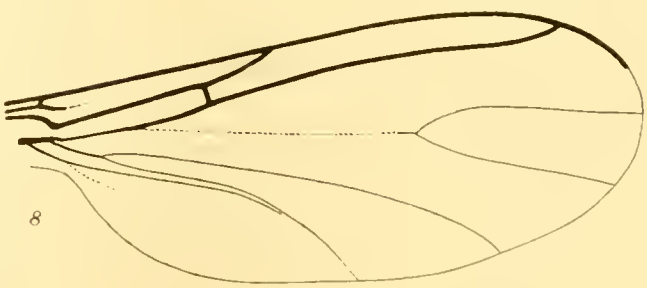

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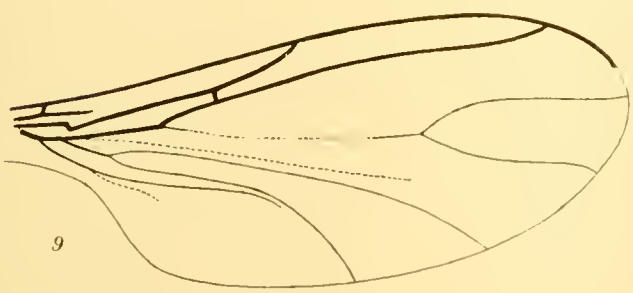

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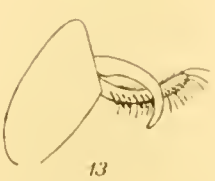

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14

Gunther Enderlein
& J. J. Kieffer del.

No. XIV.—DIPTERA, TIPULIDÆ.

By F. W. Edwards, B.A. (Cantab.), F.E.S.

(*Contributed by permission of the Trustees of the British Museum.*)

(Plates 10 and 11.)

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 1st February 1912.

The collections here described comprise 24 or 25 species taken in the Seychelles by Mr Hugh Scott, together with 3 collected by Mr J. C. F. Fryer in Aldabra. Those taken in the Seychelles were practically all obtained in the high endemic mountain forests, which will account for the very large proportion of new species. One would, however, naturally expect the Tipulid Fauna of the Seychelles to be of considerable interest, more particularly as no member of the family has until now been recorded as occurring in those islands. Such expectations have been fully realised, for of the 27 species described in the sequel no less than 23 appear to be new to science.

Taken together, the membership in the different groups is as follows:

Limnobiini 10 (11 ?).
Rhamphidiini 8.
Eriopterini 5.
Anisomerini 4.

It will be seen at once from the above that the Limnophilini and the Tipulidæ longipalpi are quite unrepresented. This is remarkable, as *Limnophila*, *Tipula*, and *Pachyrrhina* are usually well represented in the tropics. The common tropical genus *Eriocera* too is badly represented, and the two species here assigned to it approximate to *Penthoptera* in size and in their somewhat pubescent wings; it may be that the genus *Penthoptera* will have to be given up. *Penthoptera* only differs from *Eriocera* in that its members have hairy wings, and the two Seychelles species seem to be intermediate, since the wings are only slightly hairy at the tip. They are smaller than most of the species of *Eriocera*. Apart from these rather surprising negative characters, the fauna shows some interesting features. *Thaumastoptera aldabrensis*, if correctly placed, is the second species of the genus, the other being European; *Anisomera* had only been recorded from Europe and America; *Thrypticomyia* and *Tasiocera* only from

Australia. All the species here described as new, with the exception of *Geranomyia immaculata*, fit fairly well into existing genera. The most interesting insects in the collection however are the *Ceratocheilus* and the two species of *Styringomyia*; these have also proved of value indirectly, since in determining them I have been able to clear up some interesting points of synonymy.

The relationships of the fauna as a whole are necessarily not very evident, since the collection of Tipulidæ in the tropics has been so much neglected, owing no doubt to their extreme fragility. There seems however to be a closer connection with Africa than with India. The various relationships can best be expressed by means of a table:

Seychelles Species		Nearest Ally	
Name	External Distribution	Name	Distribution
Dicranomyia tipulipes	S. Africa	*D. tangentialis*, *D. consimilis*	E. Africa
D. gardineri	W. and S.E. Africa	? *D. vicarians*	New Zealand (Antarctic)
D. spadicithorax	——	*D. pulchra* *D. afra*	Java Caffraria
Thrypticomyia seychellensis	——	*T. auripennis*	E. Australia
Limnobia rhizosema	Kilimandjaro, E. Africa		
L. mahensis	——	*L. umbrata*	Java; Singapore; Taiping; E. Africa (Mombasa)
Teucholabis flavonotata	Africa (L. Victoria Nyanza)	An undescribed species	Mashonaland
Elephantomyia insularis	——	? *E. wahlbergi*	Caffraria
Ceratocheilus seychellarum	——	? *Toxorrhina madagascariensis* *Cerat. cornigerum*	Madagascar Kamerun
Styringomyia annulipes	Madagascar	*S. crassicosta* *S. ceylonica*	Africa India; Ceylon; Straits Settlements
Mongoma pennipes	Borneo; Ceylon; Semarang		

In regard to some of the generic names used, explanation is necessary. Some writers are following Hendel and Coquillet in adopting the *nomina nuda*—for such they are for practical purposes—of "Meigen's 1800 paper." The present writer, in common with many of our leading dipterists, refuses to accept these, for other reasons besides the one given. Secondly, the name *Furcomyia*, substituted by Coquillet for *Dicranomyia*, is rejected. The writer considers that its validity dates from 1910, as Meigen merely quoted it as a manuscript name given by Megerle, and neither adopted it nor gave any description. *Dicranomyia* therefore takes precedence. The same argument will apply to "*Marginomyia*" and *Dicranoptycha*. *Limonia* (Meigen 1803) has sometimes been used for *Limnobia* (Meigen 1818), but is not adopted here, as the

first description (of *Limonia*) is totally inadequate, and, moreover, Meigen states that the antennæ are 16-jointed, which is not the case in the typical species of his *Limnobia*. Thus there seems no necessity to reject this well-established name. *Eriocera* is used in preference to *Caloptera* or *Evanioptera*; *Caloptera* was published without description; *Evanioptera*, as far as I can ascertain, two or three months later than *Eriocera*.

Sub-fam. **Limnobiinæ**. Group **Limnobiini**.

Genus Dicranomyia Stephens, Cat. Brit. Ins., ii. 243 (1829).

1. *Dicranomyia tipulipes* Karsch, Ent. Nachr., xii. 51, 1 (1886). (Plate **10**, fig. 1, wing; plate **11**, fig. 1, ♂ genitalia.)

Length ♂ body 5 mm., ♀ body 6 mm.
„ „ wing 6 mm., „ wing 7 mm.

These specimens are smaller than the type, as Karsch gives a wing measurement of 8·5 mm. They also differ in the absence of a yellow margin to the median band of the thorax, and in the fact that the 6th longitudinal vein is not markedly paler than the rest. It is possible therefore that they may prove eventually to be distinct from *D. tipulipes*.

I have failed to find any real difference between *D. tipulipes* Karsch, and *D. consimilis* Bergroth, by comparing the descriptions, and think it probable that they and the Seychelles specimens are merely forms of one species. The chief distinguishing character given by Bergroth, viz., the length of the small cross-vein, is variable in the specimens before me; in three the submarginal cell and discal cell actually touch; in the others there is a short cross-vein separating them. The present specimens all have a blackish spot at the base of the basal cells, which is mentioned by Karsch but not by Bergroth. Karsch's statement that *D. tipulipes* has 15-jointed antennæ is probably a mistake; in all the Seychelles specimens the antennæ are normal. Karsch does not mention the blackish tips of the tibiæ. *D. tangentialis* Speiser, from Kilimandjaro, is also very closely allied, though perhaps distinct.

Loc. Seychelles. Silhouette: Mont Pot-à-eau, 2 ♀. Mahé: Forêt Noire, 1 ♀; Mare aux Cochons, about 1500 feet, 1 ♀; Cascade Estate, 800—1500 ft., 1 ♂, 1 ♀. Also South Africa: Pungo Andongo (Karsch); Cape Town (L. Péringuey); Caffraria (*D. consimilis* Bergroth).

2. *Dicranomyia gardineri*, sp. n. (Plate **10**, fig. 2, wing; plate **11**, fig. 2, ♂ genitalia.)

Cinereo-fusca, thorace fusco-trilineato, alis parum infuscatis et maculatis, venulâ transversâ parvâ, brevi.

♂♀. *Head*: antennæ dark, joints about as long as broad. *Thorax* greyish, a median and two smaller lateral brown stripes on mesonotum before suture, two brown spots on mesonotum behind suture. *Legs* testaceous, tips of femora and tibiæ indistinctly darker. *Wings* faintly fuscous-tinged; dark spots at base of basal cells, at base of præfurca, and on the marginal cross-vein (the stigma); sometimes also on first longitudinal and at apex of præfurca. Veins dark; first longitudinal sometimes paler.

Mediastinal vein reaching costa almost at origin of præfurca, subcostal cross-vein close to its tip; first longitudinal vein sharply bent up to costa near its tip, marginal cross-vein nearly in a line with the bent portion, at about $\frac{1}{3}$ the length of the submarginal cell; submarginal cell slightly expanded at apex, nearly twice as long as præfurca. Knob of halteres grey, stalk whitish ochreous. *Abdomen* fuscous.

Length of body 4·5—6 mm.
,, wing 5—7 mm.

This species varies considerably in size and in the distinctness and amount of the dark markings on the wings. It appears to come nearest to *D. vicarians* Schiner, though there may be no real relationship. The two are certainly quite distinct.

Loc. Seychelles. Mahé: Cascade Estate, 800—1500 ft., 9 ♂, 7 ♀; Forêt Noire, 2 ♂; forest behind Trois Frères, 2000 ft., 1 ♂, 1 ♀. Also Africa: the following are in the British Museum; Obuasi, Ashanti, 7. vi. 1907, 1 ♂ (Dr W. M. Graham); Mt. Chirinda (S. Rhodesia) 3000 ft., 31. v. 1911, 1 ♀, and 12. vi. 1911, 1 ♂, 1 ♀ (C. F. M. Swynnerton).

2 *a*. *Dicranomyia* sp.

A single immature specimen (♂). It closely resembles *D. seychellarum* in neuration and colouring, but the wings are entirely unspotted. There are also differences in the genitalia. The absence of spots on the wings may be due to its immature state.

Loc. Seychelles. Mahé: Cascade Estate, 800—1500 ft.

3. *Dicranomyia spadicithorax*, sp. n. ♀.

Fusca, thorace supra fusco-spadice, femoribus ad basin ochreis, alis marmoratis et maculatis, antennarum articulis moniliformibus et maculatis.

♀. *Head* greyish, nearly globular; eyes, rostrum and neck black. Antennæ slightly longer than head and rostrum together, with the scape fuscous, first joint curved, more than twice as long as second; joints of flagellum moniliform, without any sign of pectination, but rather broader than long, 3rd, 5th, 7th, 9th, 11th, 13th and 14th brown, 4th, 6th, 8th, 10th and 12th light ochreous. Rostrum somewhat produced, about as long as the head. Neck rather long and narrow. *Thorax* with a large chocolate-brown patch above, extending downwards to the level of the insertion of the wings, bordered by a fine white line; pleuræ pale ochreous with *three* chocolate-brown longitudinal stripes: one broad and median, the others narrow and interrupted, just below the base of the wings and along the base of the coxæ. *Legs* very dark brown, basal two-thirds of femora pale ochreous; middle tibiæ paler brown in the middle. *Wings* pale ochreous, mottled over the whole surface with light grey; all the cross-veins more or less infuscated; blackish spots distributed as follows: one or two on the first longitudinal vein; at the apex of the mediastinal vein; at the base of the præfurca; at the apex of the præfurca (the largest and most conspicuous); on the marginal cross-vein; at the apex of the anterior branch of the second longitudinal vein, of the discal cell and of the seventh longitudinal. Tip of mediastinal vein a little beyond the origin of the præfurca, the subcostal cross-vein close to this tip; marginal cross-vein near the tip of the first longitudinal, which is bent sharply up towards the costa at about $\frac{4}{5}$ of the length of the wing; second posterior cell

very narrow at base. *Halteres* pale ochreous, knob marked with brown. *Abdomen* brown above, pale beneath, with one dark brown lateral line; base and sides of first segment dark chocolate-brown.

Length of body 7 mm.
,, wing 6·5 mm.

This species is closely allied by its moniliform antennæ and wing-markings to *Rhipidia afra* Bergroth, but differs markedly in its smaller wings and in the coloration of the thorax. It shows still greater resemblance to *R. pulchra* Meijere, from Java. The chief differences are that in *R. pulchra* the antennæ are unspotted (?), the pleuræ have only two brown stripes, the abdomen is pale above and below, and the bases of the tibiæ as well as of the femora are ochreous; the dark spot on the 7th longitudinal vein is near but not at the apex.

Loc. Seychelles. Mahé: 4 ♀ from Cascade Estate, 1909.

Meijere has recently (Tijd. v. Ent., 1911, p. 27) recorded the male of *R. pulchra* and now places the species in *Dicranomyia*, and without doubt the present species must be placed in the same genus. I consider, however, that these species, and others I have seen from Africa, render it advisable to sink *Rhipidia* as at most a subgenus of *Dicranomyia*. The antennæ of the species of *Rhipidia* seem to show insensible gradations from being quite simple to being strongly pectinate. The British Museum possesses ♂ and ♀ specimens of *R. afra* from Uganda, and the antennæ are not pectinate in either sex, so that this species, at least, is a *Dicranomyia*.

Genus Thrypticomyia Skuse, Proc. Linn. Soc. N. S. Wales, ser. 2, iv. 774 (1890).

4. *Thrypticomyia seychellensis*, sp. n. (Plate **10**, fig. 3, wing; plate **11**, fig. 3, ♂ genitalia.)

Fusca, thorace rufescente, tarsis albis; alis hyalinis, stigmate infuscato, brevi.

♂♀. *Head* blackish, antennæ dark fuscous. *Thorax* rufescent ochreous, more fuscous above, almost globular in shape. *Legs* dark fuscous; coxæ reddish ochreous, femora lighter towards the base, tarsi with apical $\frac{3}{5}$ of metatarsus, and the 2nd and 3rd joints white; 4th and 5th, sometimes also part of 3rd pale brown, claws dark. *Wings* hyaline, tinged with brown on the outer half, with violet or coppery reflections; stigma distinct, short, fuscous; veins and margins fringed with hairs; usually the subcostal cross-vein is just before, and the tip of the mediastinal vein a little after, the origin of the præfurca; marginal cross-vein about in the middle of the stigma, placed some distance before the tip of the first longitudinal vein, which ends freely in the wing; supernumerary cross-vein usually precedes marginal only by a distance about equal to its own length, both it and the marginal cross-vein are sometimes unpigmented, and so may appear at first sight to be absent; great cross-vein about middle of discal cell. *Halteres* dark fuscous, base of stalk ochreous. *Abdomen* dark fuscous, lighter below.

♀ with the abdomen markedly contracted at base.

Length of body 4—6 mm.
,, wing 5—7 mm.
,, legs 13—17 mm.

This species is very close to *T. auripennis*, from Sydney, N.S.W. The chief differences may be tabulated as follows (the characters of *T. auripennis* are drawn from 2 specimens in the British Museum):

T. seychellensis.	*T. auripennis.*
Thorax rufescent ochreous.	Thorax light ochreous brown.
Apical $\frac{3}{5}$ or more of metatarsus white.	Half of metatarsus white.
Apical tarsal joints light brown.	Apical tarsal joints white.
Tip of mediastinal vein usually beyond origin of præfurca.	Tip of mediastinal vein opposite origin of præfurca.
Stigma shorter.	Stigma longer.
Supernumerary cross-vein preceding marginal by a distance usually not much greater than its own length.	Supernumerary cross-vein preceding marginal by a distance several times its own length.
Halteres shorter.	Halteres longer.

I have seen two species from Ceylon, which though they do not invalidate the genus differ in several respects from both *T. seychellensis* and *T. auripennis* (*vide* Ann. Mag. Nat. Hist., (8) viii. 1911, p. 58). Brunetti (Rec. Ind. Mus., vol. vi. p. 270) considers that *Thrypticomyia* is untenable. Admittedly it stands very close to *Dicranomyia*.

Loc. Seychelles. Found in shady places in the mountain-forests; a number of specimens often hang by their front tarsi in rows, suspended from threads of webs stretched between bushes etc. (See Scott's introductory paper, vol. XIV. of these Transactions, p. 32.) Mahé: Cascade Estate, 800—1500 ft., 14 ♂, 13 ♀; Morne Seychellois, over 1500 ft., 1 ♂; Morne Blanc, 1 ♀; above Port Glaud, 500—1000 ft., 1 ♂. Silhouette: near Mont Pot-à-eau, 1500 ft., 8 ♂, 6 ♀.

Genus Geranomyia Haliday, Ent. Mag., i. 154 (1833).

Subgenus Monophana, n. Palpi uniarticulati. Venula transversa subcostalis ab apice venæ auxiliaris remota; vena longitudinalis prima ad costam non attingens.

5. *Geranomyia* (*Monophana*) *immaculata*, sp. n. (Plate **10**, fig. 4, wing.)

Rufescens, pedibus testaceis, alis immaculatis, venis ochreis.

♀. *Head* with collar and rostrum black, eyes outlined with whitish, antennæ dark brown, joints of flagellum about as long as broad, rostrum shorter than thorax. *Thorax* reddish ochreous with a darker central stripe above. *Legs* testaceous, trochanters with minute black dots, femora somewhat darker at tip. *Wings* hyaline, stigma absent, veins ochreous. Mediastinal vein reaching costa at origin of præfurca, subcostal cross-vein placed far before the tip, a distance greater than the length of the præfurca; first longitudinal vein not reaching costa, marginal cross-vein at its tip; submarginal cell $2\frac{1}{2}$ times the length of the præfurca, slightly contracted at apex. *Halteres* reddish ochreous. *Abdomen* fuscous.

This species has a facies quite unlike that of the European *Geranomyia*, though it must be included in that genus at present.

Length of body 5 mm.
„ wing 5·5 mm.
„ rostrum 1·2 mm.

Loc. Aldabra, 1 ♀.

Genus Limnobia Meigen, Syst. Beschr., i. 116 (1818).

(*Limonia* Meigen, Illiger's Mag., ii. 262, 1803.)

6. *Limnobia rhizosema* Speiser (*Limonia*), Wiss. Ergebnisse der Schwedischen Zool. Exp. nach dem Kilimandjaro, ii. 10 (Diptera) 4, p. 48 (1909).

Dr Speiser has kindly confirmed my determination of this species. The Seychelles specimens differ from the type in the position of the dark band of the femora: typically this is apical, but in all the Seychelles specimens it is just before the apex. In one of Speiser's specimens however this was the case, and he does not consider the difference to be specific.

Loc. Seychelles. From the mountain-forests. Mahé: Morne Blanc, 1 ♀; Forêt Noire, 1 ♂; Cascade Estate, 3 ♂, 1 ♀. Silhouette: Mont Pot-à-eau, 1 ♂, 1 ♀; Plateau of Mare aux Cochons, 1 ♂. Also East Africa, Kilimandjaro (Swedish Zool. Exp.).

7. *Limnobia mahensis*, sp. n. (Plate **10**, fig. 5, wing; plate **11**, fig. 4, ♂ genitalia.)

Ochrea, infuscata, pleuris fusco-unilineatis, alis subfuscis, fusco-maculatis; antennarum articulis aeque longis ac latis.

♂♀. *Head* dark; antennæ alike in both sexes, hardly as long as thorax, dark brownish, joints about as long as broad. *Thorax* rather bright brownish ochreous, with a dark fuscous stripe along the pleuræ; a median stripe on mesonotum in front of suture, 2 spots behind suture and a spot on metanotum darker brownish. *Legs* testaceous, tips of femora somewhat darker. *Wings* light fuscous, darker fuscous spots at the base and apex of the præfurca and on the marginal cross-vein, other cross-veins infuscated. Mediastinal vein reaching costa at the level of the middle of the præfurca, subcostal cross-vein at its tip; præfurca more or less distinctly angulated, sometimes emitting a vein-stump towards the base of the wing; tip of first longitudinal vein sharply bent up towards the costa, nearly in a line with the marginal cross-vein; submarginal cell hardly half as long again as the præfurca. *Halteres* fuscous, base of stem ochreous. *Abdomen* fuscous above, brownish ochreous below, genitalia dark brownish.

Length of body 4·5—5·5 mm.
„ wing 5·5—6·5 mm.

This species has a very *Dicranomyia*-like appearance.

Loc. Seychelles. Mahé: Mare aux Cochons, 1500 ft., 5 ♂, 4 ♀; Cascade Estate, 800—1500 ft., 3 ♂, 3 ♀.

Dicranomyia umbrata Meij. (Tijd. v. Ent., 1911, p. 25) from Java is evidently a true *Limnobia*, and very closely allied to *L. mahensis*, but the thorax is rather darker, the angulation of the præfurca is imperceptible, and the genitalia differ (I have compared

mounts of the genitalia of the two species). Specimens of *L. umbrata* from Singapore, Taiping (Straits Settlements), and Mombasa (E. Africa), are in the British Museum Collection.

8. *Limnobia magnicauda*, sp. n. (Plate **10**, fig. 6, wing; plate **11**, fig. 5, ♂ genitalia.)

Ochrea, infuscata, pleuris fusco-unilineatis, alis fuscis, immaculatis; antennarum articulis duplo longioribus quam latis.

♂♀. Closely resembles *L. mahensis* in form and colour of body, but differs as follows: *Head*: antennæ in ♂ longer than head and thorax together, joints ovate, quite twice as long as broad; in ♀ shorter, joints shorter. *Thorax*: markings as in *L. mahensis*, but indistinct. *Legs*: tips of femora not darker than the rest. *Wings* darker than in *L. mahensis*, unspotted except for the stigma, which is situate on the marginal cross-vein; præfurca not angulated, gently curved at the base. *Halteres* fuscous, base of stem ochreous. *Genitalia* large, ochreous with black hooks.

Length of body 5 mm.
,, wing 5 mm.

Loc. Seychelles. Mahé: high forest of Morne Blanc and Pilot, 1 ♂; Morne Seychellois, over 1500 ft., 1 ♂; Mare aux Cochons, 1500 ft., 2 ♂, 1 ♀; Cascade Estate, 800—1500 ft., 1 ♂.

9. *Limnobia iridescens*, sp. n.

Infuscata, thorace flavo-signato, alis iridescentibus, halteribus albis.

♀. Differs from *L. magnicauda* as follows: mesonotum in front of suture orange, except for a central posterior fuscous spot, behind suture dark fuscous; apices of femora somewhat thicker and darker; wings with brilliant purple reflections except at the tip, which is coppery (these reflections can be seen though much less distinctly in *L. magnicauda*, but in that species are chiefly coppery, with very little purple); halteres entirely translucent white.

Length of body 4 mm.
,, wing 5 mm.

Loc. Seychelles. Mahé: Cascade Estate, 800—1500 ft., 1 ♀.

10. *Limnobia thomasseti*, sp. n. (Plate **10**, fig. 7, wing; plate **11**, fig. 6, ♂ genitalia.)

Ochrea, pleuris ochreis, haud lineatis; alis hyalinis, stigmate distincto, præfurcâ arcuatâ, cellulâ submarginali præfurcâ duplo longiore.

♂♀. Resembles *L. magnicauda*, but larger, more ochreous, and with the markings on the back of the thorax more distinct; no dark stripe on the pleuræ. *Head* greyish, eyes outlined with white. Joints of antennæ ovate, but shorter than in *L. magnicauda*, almost moniliform; antennæ in both sexes shorter than thorax. *Legs* testaceous, tips of femora ochreous, preceded by a slightly darker ring. *Wings* hyaline, only faintly tinged with fuscous, stigma distinct. Tip of mediastinal vein ending in costa just before the level of the base of the submarginal cell; præfurca strongly curved at base; all the cells

round the tip of the wing rather long and narrow, submarginal almost twice as long as præfurca. *Halteres* fuscous, base of stem ochreous. *Genitalia* rather large, ochreous with black hooks.

Length of body 6 mm.
,, wing 6·5 mm.

A similar but distinct species, of which there are specimens in the British Museum, occurs in Eastern India.

Loc. Seychelles. Félicité, Dec. 1908, 1 ♂, 1 ♀. Mahé: Mare aux Cochons, 1500 ft., 1 ♂.

Group **Rhamphidiini.**

Genus Elephantomyia Osten-Sacken, Proc. Acad. Philad., 1859, p. 220.

11. *Elephantomyia insularis*, sp. n. ♀.

Ochracea, segmentis abdominis fusco-marginatis; alis maculatis, stigmate alarum infuscato.

♀. *Head* including antennæ and rostrum dark fuscous; eyes black. Rostrum as long as whole body, the palps inserted very close to its tip. Collar nearly as long as head. *Thorax* dark brownish ochreous, with very indistinct slightly darker markings; pleuræ lighter ochreous. *Legs* except coxæ dark brown; femora very slightly thicker and darker at apex. *Wings* faintly brownish, spotted with brown at the base of the præfurca and on the cross-veins; stigma opaque, brown. Mediastinal vein entering costa just before the level of the great cross-vein; subcostal cross-vein almost at its tip; no marginal cross-vein; the three veins arising from the discal cell equidistant at base. *Abdomen* ochreous, the segments rather broadly fuscous-margined.

Length of body 8 mm.
,, wing 9 mm.
,, rostrum 8 mm.
,, legs 25 mm.

Loc. Seychelles. Mahé: Forêt Noire, X.—XI. 1908, 1 ♀.

Genus Ceratocheilus Wesché, Jour. Linn. Soc. London, Zool., xxx. 358 (1910).
Neostyringomyia Alexander, Can. Ent., xliv. 85 (1912).

12. *Ceratocheilus seychellarum*, sp. n.

Cinereo-fuscum, thorace 3-vittato; venulis transversis infuscatis.

♂♀. *Head*: antennæ blackish; occiput whitish; eyes smaller in ♀ Rostrum as long as abdomen. Neck long, black. Third joint of antennæ not much smaller than second. *Thorax* projecting over the neck, greyish, with a median and two lateral brown stripes, the laterals more posterior; pleuræ dark brown, edges of nota pale. *Legs* uniformly dark; front femora markedly thickened at apex, middle and posterior femora also thickened but to a less extent. *Wings* hyaline, base of second longitudinal vein, small

and great cross-veins, and apex of discal cell infuscated. *Halteres* entirely pale ochreous. *Abdomen* dark brown, the spaces between the terga ochreous.

Length of body 5 mm.
,, wing 4 mm.
,, rostrum 4 mm.

Loc. Seychelles. Mahé: 2 ♂, one from Forêt Noire, X.—XI. 1908; marshes on coastal plain at Anse aux Pins and Anse Royale, 1 ♀.

C. seychellarum is closely allied to *C. cornigerum* Speiser (*winn-sampsoni* Wesché) (*vide* Ann. Mag. Nat. Hist., ser. 8, viii. 1911, p. 279), differing chiefly as follows: the spots on the wings are fainter, and there is no spot on the 1st longitudinal vein midway between the base and the origin of the præfurca, which is well-marked in *C. cornigerum*; the rostrum is relatively longer and the second joint of the antenna smaller. From *Toxorrhina madagascariensis* Meunier, the present species is distinguished by the neuration (?), and by its smaller size and relatively longer rostrum; the third joint of the antennæ is a little larger. It is possible that these three may eventually prove to be only local forms of a rather variable species.

Genus Orimarga Osten-Sacken, Mon. N. Am. Dipt., iv. 120. x. (1869).

13. *Orimarga scotti*, sp. n. ♂. (Plate **10**, fig. 8, wing.)

Subrufescenti-cinerea, antennis palpisque nigris, pedibus fuscis; alis hyalinis, venulâ transversâ magnâ prope ortum præfurcæ insertâ, venulâ transversâ marginali ad apicem venæ longitudinalis primæ insertâ, cellulâ posteriore tertiâ pedunculo longiore.

♂. *Head* blackish, antennæ and palpi black. First joint of antennæ three times the length of the second, joints of flagellum cylindrical, half as long again as broad. Rostrum half as long as head. *Thorax* greyish ochreous, more grey above. *Legs* light fuscous, femora except apex testaceous. *Wings* hyaline, stigma absent or very pale. Marginal cross-vein near apex of first longitudinal, which is indistinct and bent sharply up towards the costa; great cross-vein nearly opposite the origin of the præfurca; third posterior cell longer than its petiole, rounded at the base; submarginal and first posterior cells contracted at apex. *Abdomen* dark brownish ochreous, genitalia ochreous.

Length of body 6 mm.
,, wing 6·5 mm.

Loc. Seychelles. Mahé: Cascade Estate, 800—1500 ft., 1909, 1 ♂.

14. *Orimarga fryeri*, sp. n. ♂. (Plate **10**, fig. 9, wing.)

Ochreo-cinerea, antennis palpisque nigris, pedibus testaceis; præfurcâ angulatâ, cellulâ posteriore tertiâ pedunculo breviore.

♂. *Head* blackish, palpi black. Antennæ brownish fuscous, shorter than the thorax; joints of flagellum ovate, rather shortly hairy, half as long again as broad. Rostrum as long as head. *Thorax* and *abdomen* ochreous grey. *Legs* very slender, testaceous, apices of femora darker. *Wings* hyaline, stigma absent; præfurca rather

obtusely angulated near its origin, with a short stump of a vein extending from the angle towards the base of the wing; marginal cross-vein near apex of first longitudinal, which is distinct and gently curved into the costa; great cross-vein opposite origin of præfurca; third posterior cell very short, shorter than its petiole, contracted to a point at the base. *Halteres* pale ochreous.

Length of body 5 mm.
„ wing 5 mm.

Loc. Aldabra, 1 ♂ at light.

Brunetti (Rec. Ind. Mus., vi. 1911, p. 280) describes a species of this genus from Borneo. It is smaller than either of the two described here.

Genus Thaumastoptera Mik, Verh. Z. B. Ges. Wien, xvi. 1866, p. 302.

15. *Thaumastoptera aldabrensis*, sp. n. (Plate **10**, fig. 10, wing.)

Ochraceo-cinerea, pedibus testaceis, alis hyalinis, stigmate pallido; apice venæ auxiliaris post medium alæ extensâ, venulâ transversâ magnâ parum retractâ.

♂♀. *Head* dark; antennæ ochreous grey, as long as the thorax, joints of the flagellum ovate, twice as long as broad, with three or four long stiff hairs about their middle; palpi fuscous. *Thorax* ochreous grey above, pleuræ ochreous. *Legs* testaceous, coxæ ochreous. *Wings* hyaline, stigma distinct but pale; mediastinal vein reaching costa beyond middle of wing, at origin of præfurca, subcostal cross-vein placed far before its tip; marginal cross-vein at apex of stigma; second posterior cell nearly half as long again as its peduncle; great cross-vein carried back about $\frac{1}{3}$ of the distance between the small cross-vein and the origin of the præfurca. *Halteres* pale greyish. *Abdomen* ochreous grey in ♂, blackish in ♀.

Length of body 5 mm.
„ wing 5 mm.

The other (European) species is light yellow, with black tips to the femora.

Loc. Aldabra, 1 ♂ and 1 ♀ at light.

Genus Teucholabis Osten-Sacken, Proc. Acad. Philad., 1859, p. 222.

16. *Teucholabis flavonotata*, sp. n. (Plate **10**, fig. 11, wing; plate **11**, fig. 7, ♂ genitalia.)

Fusca, thorace flavolineato, abdomine flavonotato, femoribus fusco-annulatis; venulis transversis infuscatis, magnâ et parvâ lineam rectam fere formantibus, venulâ transversâ marginali post apicem venæ longitudinalis primæ in costam insertâ.

♂♀. *Head* dark; proboscis about half as long as head; basal joint of antennæ large, flattened, ochreous. *Thorax* dark brown above, pleuræ more chocolate-coloured; a yellow line at level of wing-insertion, continuous round front of mesonotum; another along the bases of the coxæ; a transverse raised yellow bar across the posterior end of the metanotum. *Legs* testaceous, femora with a fuscous ring just before the apex, less conspicuous on the front legs. *Wings* pale brownish, cross-veins strongly infuscated, two

or three very indistinct darker clouds on the costa. Mediastinal vein reaching costa at origin of præfurca, just before middle of wing, subcostal cross-vein near its tip; first longitudinal vein ending in costa at about $\frac{4}{5}$ of wing, marginal cross-vein some distance beyond its tip; base of submarginal cell, great and small cross-veins forming one obtusely-angulated line at about $\frac{2}{3}$ of wing; first posterior cell contracted at apex. *Halteres* yellow. *Abdomen* dark fuscous, with yellow lateral spots on the apices of the segments, almost meeting in the middle; these spots are smaller and less yellow in the female.

Length of body 4 mm.
,, wing 4·5 mm.

Loc. Seychelles. Mahé: forest behind Trois Frères, 2000 ft., 2 ♂, 1 ♀.

I have seen a damaged specimen from Lake Victoria Nyanza, and specimens of a very similar, but distinct, species from Salisbury, Mashonaland.

Genus Styringomyia Loew, Dipt. Beitr., i. 6 (1845).
Idiophlebia Grünberg, Zool. Anz., xxvi. 524 (1903).
Pycnocrepis Enderlein, Zool. Jahrb., Syst., xxxii. 65 (1912).

17. *Styringomyia mahensis*, sp. n. (Plate **11**, fig. 8, ♂ genitalia.)

Lutea, mesonoto nigro, antennis fusco-annulatis, pedibus annulis 4 latis nigris; alis parum infuscatis et nigropunctatis.

♂♀. *Head* yellowish, front bristly, especially in ♂; palpi rather dark, the three apical joints fuscous at their tip; second and third joints considerably widened apically. *Antennæ* yellowish, second joint black; joints of flagellum ovate, with whorls of bristles about their middle, spotted with fuscous, so that the antennæ have a ringed appearance. *Prothorax* fuscous yellowish. *Mesothorax* blackish above, except for a median yellow stripe behind the suture which extends across the scutellum; pleuræ and sternum clear yellow-ochreous. *Legs* yellow, rather densely covered with long hairs, and with scattered stronger bristles, with distinct black rings; four anterior femora with a narrow ring beyond the middle and a broader one just before the apex; on the hind femora the rings are similar but somewhat more conspicuous, and the anterior one is in the middle. All tibiæ with a broad ring before the middle and a narrower one at the apex. Tarsal joints blackish at the tips, and the whole of the last joint is dark (the tips of the tarsal joints are much lighter on the hind legs). *Wings* slightly infuscated, especially on the 5th longitudinal vein, with purplish reflections; a blackish spot on the small cross-vein; the great cross-vein and the apex of the discal cell are marked with blackish, as is the axillary vein towards its tip; this tip is bent downwards to the hind margin almost at a right angle, and a stump of a vein arises from the angle. *Halteres* yellowish. *Abdomen* in ♂ testaceous with narrow fuscous bands on the apices of the segments, in ♀ mostly blackish (very likely owing to discoloration); genital segment in both sexes yellowish. *Genitalia* of ♂ similar to those of *S. crassicosta*; the large upper lobes bear four terminal-dorsal appendages, of which the inner pair are very long, membranous, and terminated by a long bristle; the outer pair are much shorter than the corresponding structures in *S. crassicosta*, being reduced almost to tubercles, but terminated, as in *S. crassicosta*, by a strong spine. Between the two large lobes, at the base, is a small unpaired structure

terminating in two spines, as in *S. crassicosta*. The upper lobes bear very complicated comb-like appendages on their ventral side. Beneath all is a ventral plate (operculum), which in this species is about as long as the upper lobes (excluding the terminal appendages); in *S. crassicosta* it is distinctly shorter. The operculum is trilobed, the lateral lobes shorter and smaller than the median and much more strongly chitinised (the ♂ operculum in *S. crassicosta* is simple, not trilobed). The ♀ operculum has the sides almost parallel, the end slightly emarginate; that of *S. crassicosta* has the sides converging and the apical emargination rather more evident. The ♀ genitalia in *Styringomyia* seem to be almost as complicated as those of the male; I shall not attempt to describe them in detail here.

Length of body ♂ 7·5 mm. ♀ 5·5 mm.
„ wing ♂ 5·3 mm. ♀ 4·2 mm.
„ front leg ♂ 10 mm.
„ middle leg ♂ 8 mm.
„ hind leg ♂ 9 mm.

Loc. Seychelles. Mahé: high forest of Morne Blanc and Pilot, X.—XI. 1908, 10 ♂, 2 ♀.

18. *Styringomyia annulipes* Enderlein. (Plate **11**, fig. 9, outline of ♀ operculum.)

Pycnocrepis annulipes Enderlein, Zool. Jahrb., Syst., xxxii. 65 (1912).

Ochracea, thorace obscure fusco-bilineato, alis hyalinis, nigro-punctatis, pedibus obscure 4-annulatis; antennis ex toto luteis.

♂♀. Very much like *S. mahensis*, but less yellow, and inclined to greyish ochreous. *Antennæ* all yellowish, second joint not darkened. *Thorax* brownish ochreous above, with two darker brown rather indistinct longitudinal streaks, the median space between these is paler ochreous. *Legs* with the darker rings in the same position as in *S. mahensis*, but greyish and almost confined to the upper surface; hardly perceptible on the hind legs. Last joint of tarsi blackish. *Wings* hyaline, spots as in *S. mahensis*, but smaller and less pronounced. *Abdomen* rather lighter than in the preceding species, lower lobe of ♂ genitalia almost as long as upper. In one ♀ (probably because not discoloured) the abdomen is coloured as in ♂. The *genitalia*, in both sexes, are almost exactly like those of *S. mahensis*, the only difference that I can see being that in *S. annulipes* the ♂ operculum is less deeply trilobed; this may perhaps be due to a difference in mounting. Notwithstanding the close resemblance in structural characters between the two species, I consider that they are well distinguished both by coloration and by the slightly different relative length of the wings.

The writer's determination of this species was confirmed by Dr Enderlein, who kindly compared a specimen with his type.

Length of body ♂ 6·5 mm. ♀ 5·2 mm.
„ wing ♂ 4·7 mm. ♀ 4·5 mm.

Loc. Seychelles. Silhouette: plateau of Mare aux Cochons, 6 ♂, 3 ♀. Mahé: Mare aux Cochons, 1 ♂. Dennis Island, 2 ♂. Also Madagascar.

This is a strikingly isolated genus, more so perhaps than any other in the Limnobina anomala (=Rhamphidinæ of Kertesz). The insects with their short antennæ and legs, rather long and narrow wings, and elongated abdomens, look more like Chironomidæ than Limnobiidæ; the resemblance may be only superficial, or may indicate an ancestral connection with that family. Brunetti (Rec. Ind. Mus. vi. 1911, p. 297) places the genus in the Eriopterini between *Mongoma* and *Gonomyia*; I cannot follow him in this, as I consider *Styringomyia* is much more nearly related to *Teucholabis* and *Paratropesa*.

Styringomyia seems to occur throughout the Ethiopian, Oriental and Australasian regions. The first recent species described was *S. didyma* Grimshaw, from the Sandwich Islands. This has since been recorded from the Caroline Islands (as *Idiophlebia pallida*), Semarang, Batavia, Pasuruan, and Queensland. The second species, *S.* (*Idiophlebia*) *crassicosta* Speiser, was described from Kamerun; it is widely distributed in Africa; the British Museum possesses specimens from N. Nigeria, Gold Coast, Mashonaland, Natal, Brit. E. Africa and Delagoa Bay; I have also seen it from the Cape of Good Hope; Mr C. P. Alexander redescribes it (Can. Ent., 1912, p. 83, as *S. howardi*) from Queliniani, Zambesi River. My *S. ceylonica* from Ceylon (also found in India and the Straits Settlements) may be only a form of *S. crassicosta*, but there are slight differences in the ♂ genitalia; it is rather surprising, considering this distribution, that it is not the species found in the Seychelles. I should say that, through the kindness of Prof. Sjöstedt, I have examined the type of *S. crassicosta* and compared it with the British Museum specimens. It closely resembles *S. seychellarum*; the marked differences in the genitalia have already been pointed out. Brunetti (*loc. cit.* pp. 300, 301) describes two species from Nepaul and S. India. Finally, it may be mentioned that three species (two from Africa, one from Straits Settlements) in the British Museum collection await description.

The original description of *S. venusta* Loew is not full enough for a detailed comparison to be made, but it would seem to be distinct from any living species by the shortness of its wings. These do not vary perceptibly in length (relatively to the length of the body) in the Seychelles species. Loew (Bernstein und Bernsteinfauna, p. 38, 1850) mentions, but does not describe, another species in the name of *S. gracilis*.

Group **Eriopterini.**

Genus Ormosia Rondani, Prodr., i. 180 (1856).

Rhypholophus Kolenati, Wien. Ent. Monatschr., iv. 393 (1860).

19. *Ormosia perpusilla*, sp. n. (Plate **10**, fig. 12, wing; plate **11**, fig. 10, ♂ genitalia.)

Parva, ochracea; alis hirsutis, infuscatis, cellulâ discoidali apertâ; antennis thorace brevioribus.

♂. *Head* brownish ochreous, antennæ a little shorter than thorax, joints of flagellum about as long as broad. *Thorax* dark brown above, ochreous on pleuræ, without any distinct markings. *Legs* brownish ochreous. *Wings* fuscous-tinged, rather densely hairy, hairs on the veins, flattened and scale-like. Marginal cross-vein just before base of

first submarginal cell, which is about half as long as the second; second posterior cell about half as long as third; discal cell open, coalescent with the third posterior cell. *Abdomen* brownish ochreous.

♀. There is a single female which most likely belongs to this species. It is darker in colour than the males, the wings darker fuscous, and the abdomen appearing blackish.

Length of body 2·8 mm.
,, wing 3·5 mm.
,, front leg 10 mm.
,, middle leg 9 mm.
,, hind leg 11 mm.

Loc. Seychelles. Mahé: Cascade Estate, 800—1500 ft., 1 ♂; Mare aux Cochons, 1500 ft., 1 ♂. Silhouette: plateau of Mare aux Cochons, 2 ♂. The single female was from Mahé, in the high forest of Morne Blanc and Pilot. It may possibly represent another species.

I am afraid I can see no reason for not adopting Rondani's name for this genus, though the true generic characters are other than those he gave.

Genus Mesocyphona Osten-Sacken, Mon. N. Am. Dipt., iv. 152 (*Erioptera*, subgenus) (1869).

20. *Mesocyphona maculosa*, sp. n. (Plate **11**, fig. 11, ♂ genitalia.)

Alis fuscis, guttis 5 in costâ limpidis; femoribus annulis 2 fuscis.

♂♀. *Head* black, flagellum of antennæ dark fuscous. *Thorax* ochreous above, with a lateral dark fuscous border; pleuræ greyish ochreous, with a dark fuscous longitudinal stripe. *Legs* ochreous; coxæ dark fuscous; trochanters ochreous fuscous, darker at the tip; anterior and middle femora with a fuscous ring before the middle, all femora with a well-marked fuscous ring near the apex. *Wings* fuscous, darker towards the costa; four or five rather large ochreous spots along the costa; smaller whitish ochreous spots along the posterior and lower margins, at the terminations of the veins; a large whitish ochreous spot over the cross-veins, between the two largest costal spots; a similar smaller spot at the apex of the open discal cell. First submarginal cell five-sixths as long as second; great cross-vein a quarter of the way along the discal cell from the base. *Abdomen* dark fuscous.

Length of body 3·5 mm.
,, wing 4 mm.
,, front leg 7·5 mm.
,, middle leg 6 mm.
,, hind leg 8 mm.

Loc. Seychelles. Mahé: Mare aux Cochons, 1500 ft., 3 ♂; Cascade Estate, 800—1500 ft., 2 ♂. Silhouette: plateau of Mare aux Cochons, 5 ♂, 1 ♀.

21. *Mesocyphona albicapitella*, sp. n. (Plate **10**, fig. 13, wing.)

Flava, capite albo, alis hyalinis, flavescentibus.

♂♀. *Head* white, eyes black, antennæ pale greyish yellow, basal joint white. *Thorax* yellow-ochreous, sides mostly shining milky white. *Legs* yellow ochreous, claws black. *Wings* hyaline, veins yellow-ochreous, very hairy, especially in the apical part of the wings. Præfurca curved at the base; first submarginal cell two-thirds as long as second; second posterior cell half as long as third; discal cell open, coalescent with the third posterior cell; great cross-vein at base of discal cell, in a line with the small cross-vein. *Halteres* yellow-ochreous, the knob brownish. *Abdomen* yellow-ochreous.

In the ♀ from Mahé the thorax is entirely yellow-ochreous, and the abdomen is largely blackish (perhaps discoloured by food).

Length of body 3 mm.
„ wing 3·5 mm.
„ front leg 10 mm.
„ middle leg 8 mm.
„ hind leg 15 mm.

Although this species shows all the principal characters of the genus, it has a very different appearance and must belong to quite a different group from the last. It has a remarkable external resemblance to a yellow *Phlebotomus*, even to the white patches on the pleuræ.

Loc. Seychelles. Mahé: near Morne Blanc, X. 1901, 1 ♀. Silhouette: Mare aux Cochons, IX. 1908, 1 ♂ and 1 ♀ in coitu.

Genus Tasiocera Skuse, Proc. Linn. Soc. N. S. Wales, ser. 2, iv. 815 (1889).

22. *Tasiocera minutissima*, sp. n. (Plate **10**, fig. 14, wing; plate **11**, fig. 12, ♂ genitalia.)

♂. Minuta, fusca, perpilosa, antennis brevibus, flagelli articulis subæqualibus; alis hirtis, præfurcâ in cellulâ submarginali aut primâ aut secundâ terminatâ.

♂. *Head* obscure, fuscous brownish; antennæ hardly as long as thorax, rather densely clothed with long hair; joints of scape much broader than those of flagellum, second larger than first, nearly globose; joints of flagellum nearly equal in length, narrower towards the tip. *Thorax* brownish, somewhat shining, moderately covered with long hair. *Legs* fuscous, with rather long appressed hairs. *Wings* fuscous-tinged, all the veins except the cross-veins densely covered with very long hair. Neuration apparently rather variable, but typically as follows: subcostal cross-vein absent; first and second submarginal cells almost equal in length, præfurca arising at $\frac{1}{4}$ the length of the wing, ending in second submarginal cell, or sometimes apparently in first; base of first submarginal cell in a line with marginal cross-vein (at least in a wing mounted in balsam), a vein-stump extending from the junction towards the base of the wing; discal cell open (sometimes closed ?), coalescing with second posterior cell; great cross-vein at base of discal or second posterior cell, with it retracted some distance towards the base of the wing. *Halteres* hairy, fuscous, the knob somewhat darker. *Abdomen* with a dense covering of long dark hairs, dull fuscous, genitalia more brownish.

Length of body 1·6 mm.
„ wing 2·3 mm.
„ hind leg 6·5 mm.

This species seems to be intermediate between *Erioptera* (sensu stricto) and *Molophilus*. At first I was inclined to place it in one of these genera, and ascertained that it had not been described under either. But although it differs from *Tasiocera* in the antennal characters, which Skuse seems to regard as some of the most important diagnostic characters of that genus, yet it agrees very well in several important points, namely, the complete absence of the subcostal cross-vein; the short seventh longitudinal, which reaches only to $\frac{1}{3}$ of the wing; the position of the great cross-vein; the termination of the præfurca in the second submarginal cell; and finally the dense hairiness and the great length of the hair on the abdomen, wings and antennæ. The cross-veins, as in the Australian species, are very difficult to make out, even with the wing denuded of hair and mounted in balsam. They seem, however, to be rather variable, as pointed out in the description. Whether the præfurca ends in the first or second submarginal cell is difficult to see without mounting the wing; in the specimen mounted (the one figured) it ended in the second, but in other specimens I think it ends in the first.

Loc. Seychelles. Mahé: Morne Blanc, 1 ♂; Cascade Estate, 800—1500 ft., 2 ♂; top of Mount Sebert, 1800 ft., 1 ♂.

Genus Mongoma Westwood, Trans. Ent. Soc. London, 1881, p. 364.

23. *Mongoma pennipes* Osten-Sacken, Berlin. Ent. Zeitschr., xxxi. 204 (1887).

Dr K. Grünberg kindly confirmed my identification by comparing a specimen with the type in the Berlin Museum. The species may readily be recognised by its four posterior cells and by its white tarsi and white-tipped tibiæ, the middle tibiæ being fringed on both sides at the tip with white hairs.

Previously (Ann. Mag. Nat. Hist., ser. 8, viii. 1911, p. 63) I have considered that *Mongoma* should be regarded as a subgenus of *Trentepohlia*, this latter being an older name. Brunetti, however (Rec. Ind. Mus., vi. 1911, pp. 290—297), prefers to recognise three allied genera forming the *Mongoma* group, and as these three do not apparently intergrade it may be as well to follow him in this. His *Mongomioides*, however, is only a synonym of *Trentepohlia* Bigot (Ann. Soc. Ent. France, ser. 3, ii. p. 473, 1854), since *Limnobia trentepohlii* Wied. is the type in each. Even if the original characterisation were insufficient, as Brunetti claims, the writer's limitation of the subgenus *Trentepohlia* (prior to the publication of *Mongomioides*) would give the name a proper standing.

Meijere, on the authority of Jacobson, states that this species, like *Dicranomyia* (*Thrypticomyia*) *saltans*, forms chains on web-threads. Similar habits have been observed by Scott in *Thrypticomyia seychellensis*, and it is interesting to notice that all three species have white tarsi. It is strange that the same habit should have been developed independently in two very different genera.

Loc. Seychelles. Mahé: Cascade Estate, 800 ft. and over, 10 ♂, 4 ♀. Also Borneo, 1 ♂ (in Berlin Museum): Ceylon; Pundaluoya VI. 1889, 2 ♀ (E. E. Green); hot wells at Trincomali XI. 1891, 2 ♀ (Col. Yerbury): Semarang; Jan. and Oct. (E. Jacobson).

Group **Anisomerinæ**.

Genus Anisomera Meigen, Syst. Beschr., i. 210, xxi. (1818).

24. *Anisomera luteipennis*, sp. n. (Plate **10**, fig. 15, wing.)

Obscure lutea, margine anticâ thoracis albidâ; antennis maris et feminæ capite fere duplo longioribus; alis fusco-luteis, venulâ transversâ marginali ante medium pedunculi cellulæ submarginalis primæ insertâ.

♂♀. *Head* whitish above, palpi black; antennæ short and six-jointed in both sexes, barely twice the length of the head, last joint indistinctly divided into two, scape whitish, flagellum grey. *Thorax* greyish brown, with a fine, rather indistinct whitish line round the front margin and reaching back to the insertion of the wings; pleuræ below this darker; legs testaceous, coxæ more yellowish. *Wings* opaque, greyish brown, veins of the ground colour; first submarginal cell short, about half the length of its petiole, marginal cross-vein inserted before the middle of the petiole. *Abdomen* greyish brown.

Length of body 5—6 mm.
,, wing 5·5—6·5 mm.

Loc. Seychelles. Mahé: forest between Trois Frères and Morne Seychellois, 1500—2000 ft., XII. 1908, 1 ♂; Mare aux Cochons district, 1500 ft., I. 1909, 2 ♂, 1 ♀. Two more males without record of exact locality.

25. *Anisomera ferruginea*, sp. n. (Plate **10**, fig. 16, wing.)

Tota ferruginea, alis cum pedibus infuscatis; antennis maris capite subduplo longioribus; venulâ transversâ marginali in apicem cellulæ submarginalis primæ insertâ.

♂. *Head* ferruginous; eyes, palpi and flagellum of antennæ black; antennæ short, barely twice as long as the head, 6-jointed. *Thorax* ferruginous; legs black, coxæ ferruginous, base of femora lighter. *Wings* smoky, somewhat narrower than in the preceding species, veins all dark and clearly marked; first submarginal cell as long as its petiole, marginal cross-vein inserted at its base. *Halteres* dark fuscous. *Abdomen* entirely ferruginous.

Length of body 4 mm.
,, wing 5 mm.

This and the preceding species are the first of the genus recorded outside of Europe and America.

Loc. Seychelles. Mahé: Mare aux Cochons, 1 ♂; Cascade Estate, 1 ♂.

There is in the British Museum a single specimen of an insect from Selangor, which to the naked eye would easily pass as *A. ferruginea*, but looked at closely it is seen to have 14-jointed antennæ and only one submarginal cell. It has, however, spurred tibiæ, and only three posterior cells, as has *Anisomera*, and hence seems to be a species of *Cladolipes*.

Genus Eriocera Macquart, Dipt. Exot., i. 74 (1838).

26. *Eriocera obscuripennis*, sp. n. (Plate **10**, fig. 17, wing.)

Ferruginea, alis infuscatis; stigmate nullo, cellulis posterioribus 4; antennis maris et feminæ thorace brevioribus.

♂♀. *Head* ferruginous ochreous, eyes black, palpi and flagellum of antennæ fuscous; antennæ apparently 7-jointed in ♂, 9-jointed in ♀. *Thoraæ* ferruginous ochreous; legs blackish, coxæ and base of femora ochreous. *Wings* smoky, stigma absent; pubescence distinct on veins and in cells towards apex; four posterior cells, subcostal cross-vein placed well before the apex of the auxiliary vein, marginal cross-vein inserted at the tip of the first submarginal cell; first submarginal cell longer than its petiole; second and third posterior cells of nearly equal width at base. *Abdomen* ferruginous.

Length of body 6—7 mm.
„ wing 7 mm.

Loc. Seychelles. Mahé: Cascade Estate, 1909, 1 ♂; Mare aux Cochons, 1909, 1 ♀.

27. *Eriocera fuscinervis*, sp. n. (Plate **10**, fig. 18, wing.)

Ferruginea; alis subnigris, albidovittatis, stigmate nullo, cellulis posterioribus 4.

♀. Much resembles *E. obscuripennis*, but easily distinguished as follows:

Pubescence of wings almost absent; all the veins broadly infuscated, leaving whitish spaces in the cells; second posterior cell much contracted at base.

Length of body 7 mm.
„ wing 7 mm.

These species seem to approximate to the genus *Penthoptera*; the difference between the two genera is in any case slight and the genus *Penthoptera* is perhaps of doubtful validity.

Loc. Seychelles. Mahé: Mare aux Cochons, I. 1909, 1 ♀.

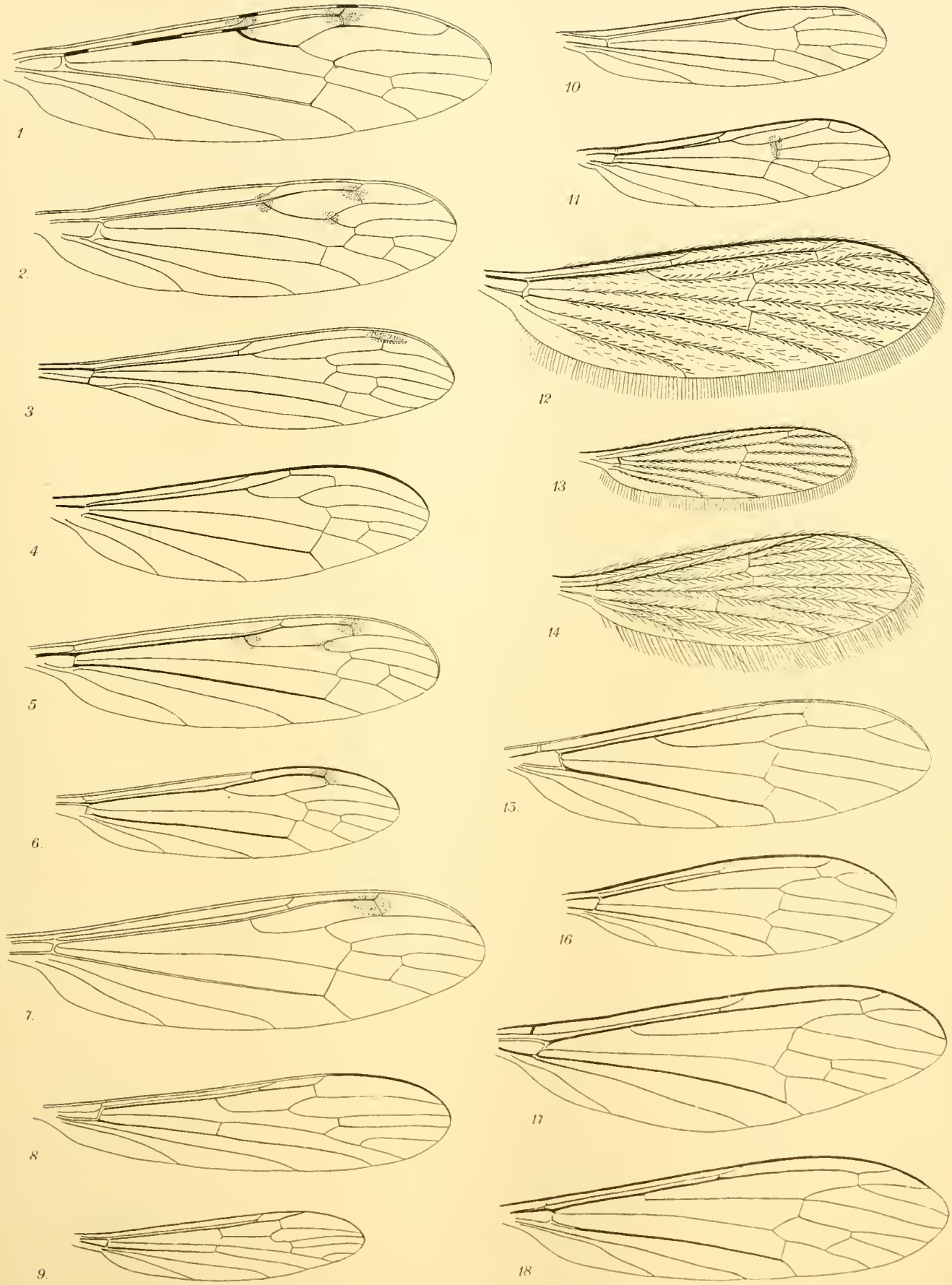
EXPLANATION OF PLATES 10 AND 11.

Plate 10.

Fig. 1. *Dicranomyia tipulipes* Karsch, wing.
Fig. 2. *Dicranomyia gardineri*, sp. n., wing.
Fig. 3. *Thrypticomyia seychellensis*, sp. n., wing.
Fig. 4. *Geranomyia* (*Monophana*) *immaculata*, sp. n., wing.
Fig. 5. *Limnobia mahensis*, sp. n., wing.
Fig. 6. *Limnobia magnicauda*, sp. n., wing.
Fig. 7. *Limnobia thomasseti*, sp. n., wing.
Fig. 8. *Orimarga scotti*, sp. n., wing.
Fig. 9. *Orimarga fryeri*, sp. n., wing.
Fig. 10. *Thaumastoptera aldabrensis*, sp. n., wing.
Fig. 11. *Teucholabis flavonotata*, sp. n., wing.
Fig. 12. *Ormosia perpusilla*, sp. n., wing.
Fig. 13. *Mesocyphona albicapitella*, sp. n., wing.
Fig. 14. *Tasiocera minutissima*, sp. n., wing.
Fig. 15. *Anisomera luteipennis*, sp. n., wing.
Fig. 16. *Anisomera ferruginea*, sp. n., wing.
Fig. 17. *Eriocera obscuripennis*, sp. n., wing.
Fig. 18. *Eriocera fuscinervis*, sp. n., wing.

Plate 11.

Fig. 1. *Dicranomyia tipulipes* Karsch, ♂ genitalia.
Fig. 2. *Dicranomyia gardineri*, sp. n., ♂ genitalia.
Fig. 3. *Thrypticomyia seychellensis*, sp. n., ♂ genitalia.
Fig. 4. *Limnobia mahensis*, sp. n., ♂ genitalia.
Fig. 5. *Limnobia magnicauda*, sp. n., ♂ genitalia.
Fig. 6. *Limnobia thomasseti*, sp. n., ♂ genitalia.
Fig. 7. *Teucholabis flavonotata*, sp. n., ♂ genitalia.
Fig. 8. *Styringomyia mahensis*, sp. n., ♂ genitalia, dorso-terminal view.
Fig. 9. *Styringomyia annulipes* Enderlein, ♀, outline of operculum.
Fig. 10. *Ormosia perpusilla*, sp. n., ♂ genitalia.
Fig. 11. *Mesocyphona maculosa*, sp. n., ♂ genitalia.
Fig. 12. *Tasiocera minutissima*, sp. n., ♂ genitalia.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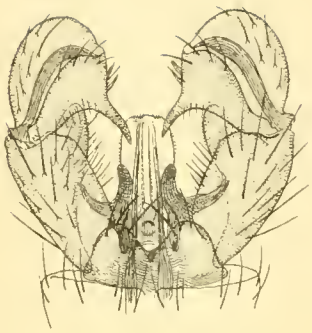

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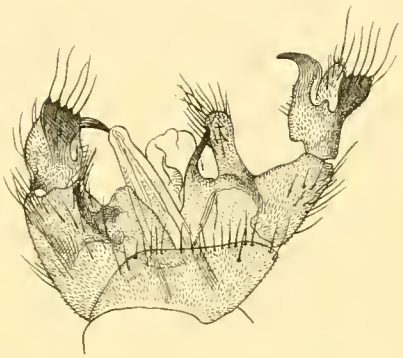

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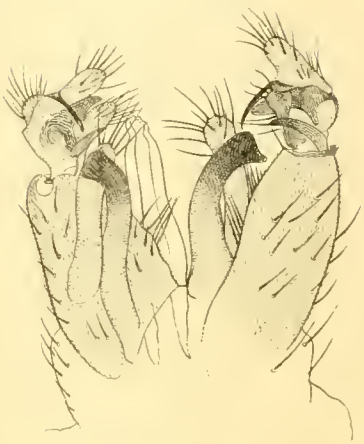

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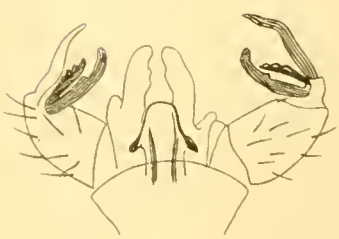

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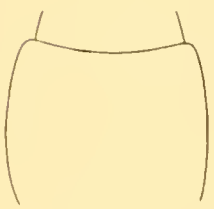

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No. XV.—COLEOPTERA, LAMELLICORNIA AND ADEPHAGA.

By Hugh Scott, M.A. (Cantab.), F.L.S., F.E.S.,
Curator in Entomology in the University of Cambridge.

(With Plate **12** and 1 Text-figure.)

Read June 20th, 1912.

This paper is an account of the Lamellicorn and Adephagous Coleoptera of the islands of the Western Indian Ocean visited by the Percy Sladen Trust Expedition in 1905 and 1908—9; *i.e.* the Seychelles, the Chagos, the Amirantes, the Farquhar Group, and Aldabra with the neighbouring islands of Astove, Assumption and Cosmoledo. It is mainly the result of the study of the collections formed by that expedition. But mention is also made of those species which were found in these islands by earlier collectors, and not by the Percy Sladen Trust Expedition; these are included in their proper systematic position in the present paper, so that it may be a complete list of the known fauna of the islands up to date. The total number of Lamellicornia and Adephaga known from these islands previous to the expedition was 32 species; this total is now increased to 55 species, and 9 of the additional 23 are new to science.

As regards the general nature of the fauna and affinities of the species, the Lamellicornia and Adephaga are considered separately, a brief discussion of these matters being placed at the beginning of the account of each group, *i.e.* on p. 216 and p. 239 respectively.

Literature. Certain important works, constantly required in studying the Coleoptera of these islands, may be mentioned. These are the following:

Alluaud's "Liste des Insectes Coléoptères de la Région Malgache*," being volume xxi of Grandidier's "Histoire Physique, Naturelle et Politique de Madagascar" (Paris, 1900). This list gives references not only to the original descriptions of species, but also to later notes and records of their capture within the region in question. In it are included all the species collected in the Seychelles by Monsieur Alluaud himself in 1892, and those found by earlier collectors. It also includes the species collected in Aldabra and in the Seychelles in 1893 by Dr Abbott. In short, the known fauna of the islands in question up to 1900 is included in this list.

Linell, in his paper in the "Proceedings of the United States National Museum," vol. xix (1897) p. 695, gives the original account of Dr Abbott's collections mentioned above.

Two very important papers have appeared since the publication of Alluaud's "Liste." The first is Professor Kolbe's "Koleopteren der Aldabra-Inseln" (Abh. Senckenb. Ges

* In the systematic account I have abbreviated this title to "Alluaud, Liste Coléopt."

xxvi. 1902, p. 569), which includes all the species obtained in those islands by Voeltzkow in 1895, together with all others known therefrom up to that date. The second is the same author's paper on "Die Coleopterenfauna der Seychellen" (Mitt. Zool. Mus. Berlin, v. 1910, p. 1), giving an account of all the species found in the Seychelles by Dr Brauer, together with those collected there by earlier investigators. Both these papers contain important descriptions of new genera and species.

Types. As in the case of all the Entomological Collections made by the Percy Sladen Trust Expedition, a first set of specimens including the Types of all new species will be placed in the British Museum. A second set will be retained in the Cambridge University Museum.

Localities. At the end of the remarks on each species is given a list of the localities where it was found, together with dates or any further particulars when such are recorded. In these lists, the dates "1908," "1909," or "1908—9," given alone (*i.e. not* followed by any collector's name) in any item, always indicate that the material was collected by myself or by some of those who helped me while I was in the Seychelles: similarly, "1905" always indicates that it was collected by the earlier Percy Sladen Trust Expedition in H.M.S. "Sealark": in all other cases, the collector's name is placed in brackets at the end of the item. When a species is found outside the area of the Expedition, the locality-list is followed by a brief summary of the external distribution.

I desire to express my indebtedness to a number of gentlemen who have given me very valuable assistance. Monsieur P. Lesne has very kindly compared a number of specimens with species in the Paris Museum, and I have also to thank Dr A. Sicard for taking several species to Paris for purposes of comparison. Herr A. Schmidt has examined several species of Aphodiini, on the generic position of which I was unable to decide without his assistance. Professor Kolbe has helped me in dealing with certain Carabidæ, as has also Dr W. Horn in connection with the *Cicindela*: and Mr G. J. Arrow has given me his aid in the determination of a number of the Lamellicornia. Lastly I have to thank Dr Sharp for much general assistance. Several other acknowledgements of help are given below in connection with particular species.

LAMELLICORNIA.

25 species of Lamellicornia are enumerated in this paper as having been found in the various groups of islands visited by the Percy Sladen Trust Expedition in 1905 and 1908—9. 23 of these were actually obtained by the Expedition: the remaining 2 species (*Rhyssemus goudoti* and *Lonchotus astovensis*) have been previously recorded, but were not found by the Expedition. Previously to the Expedition, 15 species were known from these islands: 10 are now recorded for the first time, and 5 of these are new to science, while for one new species it has been necessary to erect a new genus (*Nesohoplia*). The 25 species are representative of 19 genera. The Lucanidæ are represented by 2 species of *Figulus*, the Scarabæidæ as follows: Aphodiini, 9 species representing 5 genera; Orphnini, 1 species; Dynastini, 3 species representing 3 genera;

Melolonthini, 4 species representing 3 genera; Rutelini, 2 species representing 2 genera; Cetoniini, 4 species representing 4 genera.

The distribution of the 25 species will be considered under two heads: firstly, the internal distribution, or distribution among the various groups of islands within the area of the Expedition: secondly, the external distribution, or distribution outside that area, and the general affinities of the species.

Distribution within the area of the Expedition.

Before considering this, certain features of the various groups of islands must be briefly recalled. The Seychelles differ from all the other groups in being very mountainous islands of granitic formation, with luxuriant and highly peculiar indigenous forests remaining in the higher parts of the mountains. All the other groups consist of low islands of coral formation; of them, the Chagos Group is by far the Easternmost, and nearest to Ceylon and India; the Amirantes lie very close to the Seychelles; while the islands of the Aldabra Group (Aldabra, Assumption, Astove, and Cosmoledo) lie farthest to the South-West, and are distinguished from the rest by their nearness to Madagascar, from which country also the flora of Aldabra is largely derived.

The following table is designed to show the distribution of Lamellicornia within the area of the Expedition, 5 groups of islands having to be taken into consideration for this purpose.

Before the names of the species:

* indicates that the species is new to science,

† indicates that the species is recorded from these islands for the first time.

	Seychelles Group	Chagos Group	Amirantes Group	Farquhar Group (incl. St Pierre and Providence)	Aldabra Group (incl. Aldabra, Astove, Assumption and Cosmoledo)
Figulus striatus	—				—
*Figulus seychellensis	—				
Aphodius lividus	—				
Aphodius nigritus	—				
*Oxyomus palmarum	—				
*Atænius lodoiceæ	—				
†Atænius frater	—				
Saprosites laticeps	—	—			
†Saprosites pygmæus	—				
Rhyssemus goudoti	—				
†Rhyssemus ritsemæ	—				
Phæocrous insularis					—
Lonchotus astovensis					—
†Temnorrhynchus truncatus					—
Oryctes monoceros	—		—		
*Nesohoplia senecionis	—				
†Comaserica granulipennis					—
Perissosoma ænescens	—				
*Perissosoma grande	—				
Parastasia coquereli	—				
Adoretus versutus	—	—			
Oxycetonia versicolor	—	—	—	—	
Protætia aurichalcea	—		—		
Oxythyrea aldabrensis					—
Mausoleopsis aldabrensis				—	—

Summarizing the above: 19 species were found in the Seychelles; 12 of these were found *only* in the Seychelles proper, 2 in the Seychelles and also in the Amirantes, 2 in the Seychelles and also in the Chagos, while 1 ranges over the Seychelles, Amirantes, Chagos, and Farquhar Groups. 7 species were found in the islands of the Aldabra Group; 5 of these were found only in that group, 1 was found also in the Farquhar Group, and only 1 was found both in Aldabra and in the Seychelles, and that one species is represented in the latter group by a distinct variety.

External distribution.

In discussing the affinities of the species and their distribution outside the area of the Expedition, it is convenient to treat of them under two heads, namely (A) species found in the Seychelles, including under this head both those occurring only in the Seychelles and those which occur also in other groups of islands; and (B) species found in the Aldabra Group (including those which occur also in certain other of the islands).

A. Seychelles. The Lamellicorn-fauna may be divided into the following classes:

(i) Endemic forms, which may be further subdivided into:

(a) species belonging to genera known only from the Seychelles: *Nesohoplia senecionis*, *Perissosoma œnescens*, *Perissosoma grande*;

(b) species belonging to very widely-distributed genera, but (so far as is known) not closely-related to their congeners in surrounding lands: *Figulus seychellensis*, *Oxyomus palmarum*, *Atœnius lodoiceæ*.

(ii) Species peculiar to the Seychelles, but representative of a widespread oriental genus: *Parastasia coquereli* (closely-related to the Ceylon species *Parastasia basalis* Cand.).

(iii) Madagascar-Mascarene species: *Figulus striatus* (represented in Seychelles by a distinct variety), *Saprosites laticeps*.

(iv) Species common to Africa and Madagascar: *Aphodius nigritus*, *Rhyssemus goudoti*.

(v) South-Asiatic species, which extend their range also into Madagascar and the Mascarenes: *Oxycetonia versicolor*, *Protœtia aurichalcea*.

(vi) African species (not ranging into Madagascar): *Oryctes monoceros*.

(vii) Very widely-spread species: *Aphodius lividus* (cosmopolitan), *Atœnius frater* (known from West Indies and Singapore), *Rhyssemus ritsemæ* (West Africa, with a variety in the East Indies), *Saprosites pygmæus* (Malay Archipelago and Sandwich Islands), *Adoretus versutus* (spread over oriental region to Fiji, and known also from St Helena).

It is important to notice that the endemic forms were for the most part found exclusively in the native mountain-forests among the endemic vegetation: in particular *Nesohoplia senecionis*, *Oxyomus palmarum* and *Atœnius lodoiceæ*, all appear to be specially attached to certain endemic plants (see pp. 225, 226, 232). On the other hand, nearly all the Southern Asiatic, African, and Madagascar species, which have extended

their range not only to the Seychelles but also to some of the other archipelagoes such as the Chagos and the Amirantes, were not found at all in the endemic forests of the Seychelles, but only in the cultivated lower country. This is very marked in such a case as that of the Cetoniine *Protætia aurichalcea*, an Indo-Cingalese species, found also in the Mascarene Islands; it is found in low cultivated plantations in the Seychelles, and on the low coral-islands of the Amirantes. Such a species in no way belongs to the true endemic fauna of the Seychelles. The same statements apply to the very widely-spread species of class (vii). This division of the Seychelles Lamellicorn-fauna into an endemic portion confined to the endemic forests in the mountains, and a non-endemic portion found in the lower lands, is only in accordance with the condition of things (so far as at present known) throughout the whole of the Coleopterous fauna—and indeed throughout many, if not all, other parts of the Insect-fauna—of the Seychelles. Professor Kolbe has remarked on it in the introduction to his paper on "die Coleopteren-fauna der Seychellen" in the following words: "Gerade in den abseits gelegenen waldigen Teilen dieser Inseln wurden von Brauer die meisten neuen Gattungen und Arten gefunden. Im Gegensatze hierzu fanden sich die kosmopolitischen, indischen, und madagassischen Elemente in dem kultivierten Teile der Insel Mahé*." There are of course exceptions, even among the Lamellicornia, to this sharp division of the faunas of the forests and of the cultivated country. For instance the two species of *Saprosites*, neither of which is endemic, occur both in the cultivated country and in the endemic forests: and the same may be said of *Figulus striatus*. But on the whole the rule holds good.

It is seen then that the Lamellicorn-fauna of the Seychelles has an endemic element consisting of species almost confined to the forests: that it has received an element from each of the nearest large land-areas, *i.e.* Africa, Madagascar, and Southern Asia: and that it also contains a portion consisting of very widely-distributed species.

By whatever method the non-endemic forms reached the Seychelles, whether by way of ancient land-connections or by some form of transport across the sea, at any rate certain of them appear to have been isolated in these islands long enough to develop into forms which are distinct, though closely related to some of their congeners. In this connection *Parastasia coquereli* is particularly interesting; it has been discussed by Professor Kolbe on p. 5 of his paper referred to above.

The genus *Parastasia* is represented by a number of species in the Indian region, and extends over the East Indian Archipelago, reaching to New Caledonia and New Zealand. *P. coquereli* in the Seychelles appears to be the Westernmost outpost of the genus: it is closely-related to, but yet distinct from, *P. basalis* Cand., a species found in Ceylon and India. Kolbe (*l.c.*) enters briefly into the question whether *Parastasia* originally reached the Seychelles by immigration across the sea, or by an old land-connection. The Madagascar-Mascarene species *Figulus striatus* also is represented in the Seychelles by a distinct form, though in this case the difference appears insufficient to justify its being designated as more than a variety.

* Mitt. Zool. Mus. Berlin, v. 1910, p. 4. The portion cited above is followed by the statement that the non-endemic elements form the greater part of the Seychelles fauna. Whether this latter statement will hold true when the collections formed by the Percy Sladen Trust Expedition are fully worked out, is doubtful.

Some of the very widespread species are probably either recent immigrants, or introduced by human agency. For example, *Aphodius lividus*, *Aphodius nigritus*, *Atænius frater*, and *Rhyssemus ritsemæ* are (as far as my experience goes) only found in the low cultivated country, feeding on the excreta of domestic animals: but under purely natural conditions there would have been no such excreta for them to feed on in the islands. *Adoretus versutus* also is chiefly found in gardens near the coast, among rose-bushes (on which it feeds) and other totally non-indigenous vegetation.

B. Aldabra Group. The Lamellicornia consist of 7 species. Of these, *Figulus striatus* is a Madagascar-Mascarene species, found also in the Seychelles, though represented there by a distinct variety; the specimens from Aldabra are of the typical Mascarene form. *Phæocrous insularis*, originally described from Aldabra, has since been recorded from Madagascar. *Temnorrhynchus truncatus* and *Comaserica granulipennis* are both Madagascar species, the latter belonging to a genus which is confined to Madagascar. The genus *Lonchotus* is also confined to Madagascar with the exception of *Lonchotus astovensis*, known only from Astove Island and not (hitherto) from Madagascar itself. Lastly, the 2 species of Cetoniini are both allied to African forms. *Mausoleopsis aldabrensis* has actually been found in Wasin Island on the coast of British East Africa, and it is so closely related to *Mausoleopsis selika* Raffray that it has been considered by Kolbe to be merely a variety of that species. *Oxythyrea aldabrensis* is allied to a South African species (*Oxythyrea marginalis* Swartz): *Oxythyrea* has representatives in Madagascar, the Comoros, and Glorioso Island.

Thus, the Aldabra Lamellicorn-fauna is entirely distinct from that of the Seychelles: its strongest affinities are with Madagascar, as might be expected from the proximity of that country: but it contains an African element in the shape of the two Cetoniini. 3 of the forms, however,—the two Cetoniines and the *Lonchotus*—are *specifically* distinct; but one of these (*Mausoleopsis*) is known to be not entirely confined to the Aldabra group, while there is the possibility that the other two may be found outside those islands.

The distribution of Cetoniini among the groups of islands visited by the Expedition is interesting. The 4 species appear to fall into two little sets of 2 species each. On the one hand, in the Northernmost and Northeasternmost groups, the Amirantes, Seychelles, and Chagos, are two South-Asiatic species (*Oxycetonia versicolor* and *Protætia aurichalcea*), which also extend into the Mascarene Islands and Madagascar. On the other hand, in the Southwesternmost of the islands, those of the Aldabra Group, are two species of strongly African affinities. In the Farquhar Group of islands the two sets of species meet, for specimens of both the South-Asiatic *Oxycetonia versicolor* and of the African *Mausoleopsis aldabrensis* have been found there.

Condition of the wings. This has been investigated in many of the species of Lamellicornia, and in no case has any trace of reduction or atrophy of these organs been found.

Lucanidæ.

FIGULUS MacLeay, Horae Ent., i. 1819, p. 110.

1. *Figulus striatus* (Olivier).

Lucanus striatus Olivier, Ent., i. 1. 1789, p. 19, Pl. IV, fig. 14.

Figulus striatus Alluaud, Liste Coléopt., p. 298; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

30 specimens were obtained in the Seychelles and 3 in Aldabra. I have also examined in the British Museum some older specimens from the Seychelles, a number from Mauritius, and 2 from Réunion. The material thus examined falls into two distinct groups as follows:

A. *Specimens from the Seychelles.* The thorax is very smooth and very little punctured. The punctures on its lateral portions are so very fine as to be hardly visible without a high power. The median longitudinal punctured area is little impressed, and does not reach to the anterior and posterior margins of the thorax, but is obliterated in front over nearly $\frac{1}{3}$ the length of the thorax and to a less extent behind. (The specimens were obtained at different dates and in several different islands of the Seychelles group.)

B. *Specimens from Aldabra, Mauritius and Réunion.* Lateral portions of the thorax fairly strongly punctured, this character being specially marked in the 3 specimens from Aldabra. Median longitudinal punctured area reaching almost if not quite to the anterior and posterior margins; in the specimens from Mauritius it is markedly impressed. Punctuation of the elytral sulci slightly stronger. The specimens from Aldabra have the head more strongly punctured.

Form A may be said to be characterised by reduction of punctuation in comparison with form B. I have been unable to find other characters separating the two forms. The basal part of the ædeagus* varies in breadth, but not (as far as I have seen) in such a way as to divide form A from form B. External sexual differences are not conspicuous: the mandibles are usually larger in the ♂, but the sexes cannot always be determined without dissection. In both sexes the left mandible has 2 rather blunt teeth, the right mandible only 1 (this computation includes neither the apex of the mandible nor a blunt protuberance at its base). The wide head with its margin distinctly sinuate in front of either eye is characteristic. The length (incl. mandibles) in my Seychelles specimens ranges from $13\frac{3}{4}$ to $17\frac{1}{2}$ mm.: an immature specimen from Aldabra reaches only 11 mm.

* The ♂ genital apparatus in *Figulus striatus* possesses a long thin membranous flagellum. This is not present in *F. seychellensis*, nor in some specimens from the British Museum which I refer to *F. marginalis* Ritsema. Judging from this very important difference, Mr F. Muir and Dr Sharp, both of whom examined the specimens, consider that probably the present genus *Figulus* should be divided. All species of the genus, however, would have to be examined for this character before a division could be satisfactorily made; and until this is done it seems best in a faunistic paper like the present to include both *striatus* and *seychellensis* under the name *Figulus*.

Loc. Seychelles. Mahé: Cascade Estate. Silhouette: from decayed outer leaf-bases of wild palm in high forest, IX. 1908; from fallen and decayed branch in forest above Mare aux Cochons, 8. IX. 1908, 1 imago, 1 pupa and several larvæ; 1 ♀ bred from pupa, IX. 1908; &c. Praslin: from decayed tree-stem in Coco-de-Mer forest, Côtes d'Or Estate, 10 specimens, XI. 1908; 3 specimens, 1905. Previously found in Mahé by Brauer (Mamelles plantation) and Allnaud.

Aldabra: Takamaka, X.—XII. 1908, 1 ♂, 1 ♀, and 1 immature specimen (Fryer). Mauritius, Réunion, Madagascar.

2. *Figulus seychellensis*, sp. nov.

Sat angustus, parallelus, niger; mandibulis unidentatis; capite grosse haud profunde, ad marginem anteriorem subtilius, punctato, in medio excavato, inter oculos postice tuberculis 2 punctatis, antice tuberculis 2 impunctatis, margine anteriore sinuato, canthis oculorum ante oculos distincte sinuatis; prothorace quadrato, circa $\frac{1}{6}$ latiore quam longo, lateribus postice crenulatis, angulis anticis parum, posticis conspicue, rotundatis, antice in medio tuberculato, disco sulco medio fortiter punctato antice abbreviato, utrinque in medio fere impunctato sed ad latera fortiter sat dense punctato; elytris punctato-striatis, striis internis haud fortiter punctatis, dente humerali parvo, haud prominente; tibiis anticis ♂ et ♀ similibus (♂ haud ad basin calcaris dilatatis). Long. corp. (cum mandib.) 9—9$\frac{1}{2}$ mm.

A small, rather narrow, parallel-sided, shining-black form. Mandibles slightly curved, each with one tooth on the inner margin rather near the base, and with the actual apex blunt. The head bears 4 obsolete tubercles, 2 near the base between the eyes, and 2 impunctate ones situated just in front of the inner margin of the orbit. With the exception of these anterior tubercles the head is punctured, the punctures being large but shallow, and becoming much finer and closer near the anterior margin. The margin of the ocular canthus is distinctly sinuate in front of the eye, and the posterior angle of the canthus is very obtuse. The prothorax is a little broader than long, with the front angles slightly and the hind angles more widely rounded off; the lateral margins bear fine crenulations towards the hind angles; there is a small tubercle in the middle of the front margin; the median longitudinal impressed and punctured line does not reach quite to the front margin; on either side of this the inner part of the disc is smooth and bears only extremely fine punctures, but the lateral parts are strongly punctured. The elytra are strongly striate, but the striæ (especially those near the suture) are not at all strongly punctured; the interstices are rather flattened; the humeral angle is very slightly toothed. The metasternum and first 4 ventral segments bear large punctures laterally, but are smooth with only a few extremely fine punctures in the middle; 5th ventral segment with large punctures, especially near the margin. The length (including that of the mandibles) is from 9—9$\frac{1}{2}$ mm.; one specimen, bred in captivity from a larva, is only 6$\frac{3}{4}$ mm. I have 5 specimens.

I have only been able to distinguish the sexes by dissection. In *F. marginalis* Ritsema* the male has an abrupt and conspicuous semicircular dilatation on the inner

* Ritsema described *F. marginalis* in Notes of the Leyden Museum, vol. i. 1879, p. 189, and added a note about the difference of the ♂ tibiæ in the same publication, vol. xvii. 1895—6, p. 138.

side of the anterior tibiæ at the base of the spur, and the spur itself is thickened and curved. The male is thus readily distinguished from the female; but in *F. seychellensis* there is no such distinction, the tibiæ of the male having no dilatation and the spur being similarly formed in both sexes.

Monsieur H. Boileau, who kindly examined specimens of *F. seychellensis*, gave it as his opinion that the species is new. It bears a certain resemblance to the Indo-Malayan *F. marginalis*, of which I have examined the type and another specimen. The form of the head is however quite different; in *F. marginalis* the ocular canthi are scarcely sinuate in front of the eyes, and the striæ of the elytra are much more strongly punctured: also in the specimens which I have seen, the posterior angle of the canthus is much less obtuse and the angles of the thorax are much less rounded off. *F. marginalis* also has the above-mentioned secondary sexual difference in the tibiæ. Monsieur Boileau mentions that he has two specimens of a *Figulus* from Benito, Portuguese Congo, which are much more closely-allied to *F. seychellensis*, but at the same time quite distinct from it.

Loc. Seychelles. Silhouette: forest above Mare aux Cochons, over 1000 ft., IX. 1908, 1 ♂ and 1 ♀ from a decaying branch of "Bois Rouge" (*Wormia ferruginea*), also a third (very small) specimen bred from a larva found in a decaying branch of the same tree. Mahé: Cascade Estate, 800—1000 ft., I. 1909, 2 specimens (1 ♀ and 1 of undetermined sex).

Scarabæidæ.

Aphodiini.

Aphodius Illiger, Käf. Preuss., 1798, p. 15.

3. *Aphodius lividus* (Olivier).

Scarabæus lividus Olivier, Ent., i. 3. 1789, p. 86, Pl. 26, fig. 222.

Aphodius lividus Alluaud, Liste Coléopt., p. 240; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

9 specimens.

Loc. Seychelles. Mahé: from low country on the main island, and from Anonyme Island, 1908—9; cultivated country (Brauer). Previously recorded from Seychelles by Fairmaire. Cosmopolitan.

4. *Aphodius nigritus*, Fabricius.

Aphodius nigritus Fabricius, Syst. Eleuth., i. 1801, p. 73; Alluaud, Liste Coléopt., p. 240; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

15 specimens.

Loc. Seychelles. Dennis Island, 1908 (Fryer): Silhouette, 1908: Félicité, from a coconut-plantation, XII. 1908: Mahé, cultivated country on main island, 1908—9, and Long Island, VII. 1908; cultivated country (Brauer): La Digue (Alluaud). Madagascar, Mascarene Islands, Tropical East Africa.

Oxyomus Castelnau, Hist. Nat. Col., ii. 1840, p. 98.

5. *Oxyomus palmarum*, sp. nov. (Pl. **12**, fig. 1, and Text-fig. 1.)

Piceus, antennis pedibusque ferrugineis, nitidus; capite antice obsolete, postice sat dense, punctulato; prothorace dense subrugose punctato; elytris longitudinaliter carinatis, carinâ quâque alterâ fortius, carinâ quâque intermediâ parum, elevatâ, interstitiis grosse haud profunde sculpturatis. Long. corp. 3 mm.

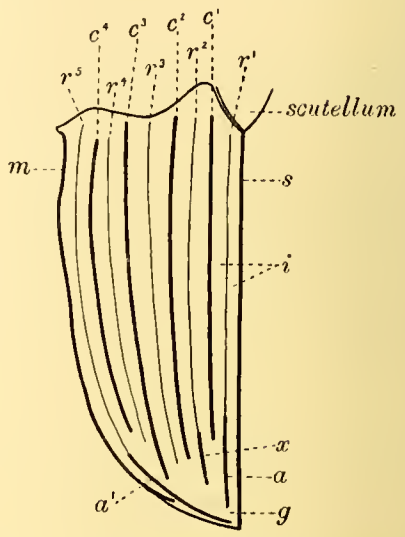

Fig. 1. Diagram of elytron of *Oxyomus palmarum*: explanation in text.

It is very difficult either to describe or to represent in a figure the remarkable sculpture of this insect. Head slightly elevated in the middle, rather densely punctured in the basal portion, the punctuation becoming obsolete in front. Thorax with a very dense subrugose punctuation, a compound microscope showing very fine punctures in the spaces between the large ones; the sides are slightly explanate towards the anterior angles, and only a faint trace of a median longitudinal depression is sometimes visible. The elytral sculpture can only be properly made out if an elytron is removed and mounted separately; it will be best understood by reference to Text-figure 1, which represents the elytron diagrammatically so that all parts of it are seen at once. Between the sutural and outer margins (*s* and *m*), both of which are elevated, are four well-marked longitudinal *carinæ* (c^{1-4}); down the middle of each *interval* between these *carinæ* runs a much less elevated longitudinal *ridge* (r^{1-5}), dividing the interval into two *interstices* (*i*); each *interstice* is curiously sculptured, bearing a longitudinal row of shallow punctures connected with one another by a shallow groove. Thus the elytron bears a number of longitudinal elevations, the alternate ones being developed into strongly-marked *carinæ*, while the intermediate ones remain as the much less elevated *ridges*. *Carinæ* 1, 2, 3 and 4 are not continued to the apex of the elytron: near the apex the two *ridges* (r^1 and r^5), intervening respectively between the sutural margin and *carina* 1, and between the outer margin and *carina* 4, become themselves developed into strong *apical carinæ* (*a* and a^1); a^1 curves round the apex of the elytron so that it almost meets *a*, the two being separated by a slight interruption at *g*; a^1 projects so much that it renders the true margin of the elytron very hard to see at the apex. A short carination (*x*) is also present near the apex on the ridge intervening between *carinæ* 1 and 2 (r^2). Elytron $1\frac{3}{4}$—2 mm. long, wing about 3 mm. long. Mesosternum closely punctate in front, the narrow part between the middle coxæ keeled. Metasternum with its central portion elevated, smooth, almost impunctate, rather strongly impressed, sloping on either side down to the impressed median longitudinal line; lateral parts finely subrugose. Abdominal segments smooth with very few fine punctures, except at the base, where each has a transverse series of

large shallow punctures separated by rugæ: segments 1 and 2 have a sharp median longitudinal keel. Tarsal claws minute and equal.

The variation appears to be very slight; two specimens are yellow instead of pitchy owing to immaturity. *O. cameratus* Schmidt, of which I have seen specimens from S. India in the British Museum, has sculpture of the same general type as, but in details very different from, that of *O. palmarum*: the elytral keels of *O. cameratus* are all equally developed, and special apical carinæ are absent.

Loc. Seychelles. The specimens, of which I collected 106, were found only in the endemic forests of Silhouette and Mahé, and *exclusively in the moist humus between the bases of the leaves of precinctive species of palms and Pandanus**: not between the decayed outer leaves, but between the inner and living ones. By far the greater number were taken from the palm *Stevensonia grandifolia*, 35 in one case being obtained from a single tree: only a small number were found in the palm *Verschaffeltia splendida*, only 2 in a *Pandanus*, and none in any other kind of tree but these three kinds. Possibly the whole life-cycle takes place in the trees, for 4 very small Lamellicorn larvæ found between leaf-bases of a growing *Stevensonia* in the same place and on the same day as the "35 specimens from a single tree," must almost certainly belong to this species. Of the 106 specimens, 99 are from Silhouette; possibly this is due to several causes; collecting in Silhouette was done in the drier months of August and September, that in Mahé from October to March. The following is a detailed list of the finds:

Silhouette: from 5 different growing *Stevensonia*-palms in damp forest near Mt Pot-à-eau, 1500—2000 ft., VIII. 1908, 8 specimens; from felled *Verschaffeltia* in forest just above Mare aux Cochons, 26. VIII. 1908, 1 specimen; from two heads of a growing *Pandanus sechellarum*, forest above Mare aux Cochons, 22. IX. 1908, 2 specimens; from a single growing *Stevensonia*, same place and day as preceding, 35 specimens; from another growing *Stevensonia*, same part of forest, 24. IX. 1908, 25 specimens; from various other palms (*Stevensonia* or *Verschaffeltia*), forest above Mare aux Cochons, 28 specimens.

Mahé: from a growing *Verschaffeltia* near Morne Blanc, about 800 ft., 19. XI. 1908, 1 specimen; from a palm (either *Stevensonia* or *Verschaffeltia*) in Cascade forest, II. 1909, 1 specimen; from a large *Stevensonia* in Cascade forest, 29. XII. 1908, 5 specimens.

Atænius Harold, Coleopt. Hefte, ii. 1867, p. 100.

6. *Atænius lodoiceæ*, sp. nov. (Pl. 12, fig. 2).

Piceus, antennis pedibusque ferrugineis, subopacus; capite dense subtiliter parum subrugose, ad marginem anteriorem sat obsolete, punctato; prothorace dense subtiliter parum subrugose punctato; elytro singulo 8-carinato, carinis sat elevatis, interstitiis regulariter punctatis subtilissimeque rugulosis, ad apicem carinâ in interstitio externo abrupte elevatâ, ultra marginem elytri prominente. Long. corp. circa 3 mm.

Head and thorax a little shining, elytra rather dull. Head densely and finely

* For a list of the animals found between these leaf-bases see the writer's paper in Trans. Linn. Soc. London, Ser. 2 (Zool.), vol. xiv, 1910, pp. 24—5; and compare the case of *Copelatus pandanorum*, discussed on pp. 259, 260 of the present paper.

punctured, except near the front margin, where the punctuation becomes somewhat obsolete. Thorax densely and finely punctured, a high power showing very small punctures scattered between the larger ones; very little explanate at the sides towards the anterior angles. The elytral sculpture is analogous to that of *Oxyomus palmarum*, with which it may be compared. Each elytron has 8 longitudinal *carinæ* in addition to the elevated sutural and outer margins: but they are only moderately elevated and almost equally developed throughout; only on the sloping outer part of the elytron is there a faint trace of the alternate ridges being more elevated than those between them, a condition which is carried to so high a pitch of development in *O. palmarum*. *Interstices* regularly punctured, a shallow groove running from puncture to puncture as in *O. palmarum*; the surface of the interstices on either side of the punctures is minutely rugulose. Interval between the 8th carina and the outer margin broad, corresponding to two interstices, between which there is no definite carina except near the apex, where a sharply-elevated *apical carina* is developed. This *apical carina* curves round the apical part of the elytron so that it almost meets the end of *carina* 1 (nearest the suture), and it projects so much as to render the true apical margin of the elytron hard to see. *Carinæ* 2—8 are of different lengths, terminating before the apex of the elytron. Length of elytron about $1\frac{3}{4}$ mm., of wing about $2\frac{3}{4}$ mm. Mesosternum closely punctured in front, the part between the middle coxæ keeled. Central part of metasternum somewhat elevated and finely punctured, only slightly impressed in the middle, much flatter than in *O. palmarum*. Abdominal segments finely punctured. Claws of tarsi minute, equal.

Loc. Seychelles. 8 specimens: 7 were found between the bases of the leaves of a growing ♂ Coco-de-Mer palm (*Lodoicea sechellarum*), which was felled and examined 28. XI. 1908, in the Coco-de-Mer forest in the Vallée de Mai, Côtes d'Or Estate: the 8th specimen was found in the same locality on the same date, but whether from a palm-tree is not specified.

7. *Atœnius frater*, Arrow.

Atœnius frater Arrow, Trans. Ent. Soc. London, 1903, p. 512.

This species was described from a series obtained in St Vincent and Grenada (W. Indies). It has since been found to occur also in the East, a specimen from Singapore being in the British Museum. I obtained two specimens in Mahé which agree closely with those from the West Indies. In this species and the allied *A. strigicauda* Bates a high-power lens reveals the existence of a network of extremely fine striæ between the punctures on the thorax.

Loc. Seychelles. Mahé: Cascade Estate; low country; neither specimen is from the endemic mountain-forests. Also W. Indies and Singapore.

Saprosites Redtenbacher, Faun. Austr., 2 ed. 1858, p. 436.

8. *Saprosites laticeps* (Fairmaire).

Psammodius laticeps Fairmaire, Ann. Soc. ent. France, ser. 5, i. 1871, p. 34.

Saprosites laticeps Alluaud, Liste Coléopt., p. 241; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

41 specimens. Fairmaire in the original description stated the colour to be "d'un brun rougeâtre assez brillant." Alluaud writes of the species (Bull. Soc. Zool. France, 1898, p. 66) as "entièrement d'un noir de poix." Almost all my specimens are shining pitchy black, with the anterior and lateral margins of the head, the legs, antennæ, and sometimes the anterior margin of the thorax, reddish-brown: a few specimens are a little lighter altogether, dark reddish-brown instead of black. The head is finely and evenly punctured. The punctuation of the prothorax seen under a high power is characteristic; near the anterior margin it is very finely punctured, and the rest of its surface bears strong punctures irregularly placed, with very fine punctures between them. Fairmaire describes the prothorax as having a scarcely distinct median longitudinal furrow; this is only visible at all in a few of my specimens, and even then is very indistinct. Elytra rather deeply crenate-striate. I have examined the wing in one specimen and found it to be about $1\frac{3}{4}$ times as long as the elytron. Metasternum punctured at the sides, with only extremely fine and somewhat rare punctures in the middle, and with a marked impressed median longitudinal line; abdominal sterna each bearing a transverse series of rugæ at its base, otherwise smooth with only extremely fine punctures. Length $2\frac{1}{2}$—3 mm.

Loc. Seychelles: all the specimens obtained by me are from Silhouette, and as in the case of the following species, some are from the endemic mountain-forest, others from the low plantation-country; forest above Mare aux Cochons, IX. 1909, 21 specimens: low coconut-planted country near the coast, Pointe Étienne, 17. IX. 1908, 12 specimens: La Digue, 1892 (Alluaud). Chagos Islands: Egmont Atoll, 1905; this is the first record from this archipelago. Mauritius, Madagascar.

9. *Saprosites pygmæus*, Harold.

Saprosites pygmæus Harold, Ann. Mus. Genova, x. 1877, p. 91: Sharp, Trans. Ent. Soc. London, 1879, p. 91, and Fauna Hawaiiensis, iii. p. 402 (1908).

My best thanks are due to Dr R. Gestro for lending me Harold's type of this species from the Genoa Museum. I compared it with specimens obtained in the Seychelles, and with 5 specimens (in the British Museum Collection) from the Hawaiian Islands, previously determined by Dr Sharp as belonging to this species. The comparison showed that Dr Sharp, who had not seen the type, was correct in his determination of the Hawaiian specimens, while those from the Seychelles must also be referred to this species.

Among the 14 specimens from the Seychelles there is considerable variation in size (length 2—$2\frac{1}{2}$ mm.) and in colour; the latter is usually ferruginous, but in some cases the elytra are darker, pitchy-reddish. There is also marked variation in the degree of closeness of the thoracic punctures, though all the specimens agree in having the punctuation evenly distributed. In most of them the elytral striæ are slightly wider and more marked than in the type, and the interstices consequently appear slightly narrower and more convex. But I could find no character on which either to divide the Seychelles specimens into more than one species, or to separate them from the type.

S. pygmæus is distinguished from the other *Saprosites* found in the Seychelles (*S. laticeps*) by its smaller size, diluter colour (reddish instead of black), and by the

thoracic punctuation being even, without any mingling of large and fine punctures on the same part of the thorax.

Loc. Seychelles: from localities differing as widely as the damp endemic mountain-forests of Mahé and the much lower and drier forest on Félicité. Mahé: high forest near Morne Blanc, XI. 1908; high forest between Trois Frères and Morne Seychellois 1500—2000 ft., XII. 1908; Cascade Estate 800—1000 ft. and forest above; from between leaf-bases of a growing *Stevensonia*-palm on Cascade Estate at about 1000 ft., XII. 1908, 1 specimen: Praslin, Côtes d'Or Estate, XI. 1908: Félicité, 3 specimens from forest, XII. 1908. Key Islands, Malay Archipelago (the type, collected by Beccari). Hawaiian Islands (Blackburn).

Rhyssemus Mulsant, Coléopt. de France, Lamell., 1842, p. 314.

10. *Rhyssemus goudoti*, Harold.

Rhyssemus goudoti Harold, Coleopt. Hefte, iv. 1868, p. 85; Alluaud, Liste Coléopt., p. 241; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

Not obtained by the Percy Sladen Trust Expeditions.

Loc. Seychelles: Mahé, 1892 (Alluaud). Madagascar, N.E. Africa, Egypt.

11. *Rhyssemus ritsemæ*, Clouët.

Rhyssemus ritsemæ Clouët, Mém. Soc. ent. Belgique, viii. 1901, p. 81.

Two specimens, for the identification of which I am indebted to Herr A. Schmidt.

Loc. Seychelles. Mahé: from side of road just above beach at Port Glaud, 5. XI. 1908. The species is recorded from W. Africa (Freetown), and the var. *indica* Clouët from the E. Indies.

Orphnini.

Phæocrous Castelnau, Hist. Nat. Col., ii. 1840, p. 108.

12. *Phæocrous insularis*, Linell.

Phæocrous insularis Linell, Proc. U. S. Mus., xix. 1897, p. 699; Alluaud, Liste Coléopt., p. 244; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 575.

14 ♂, 15 ♀: there is considerable variation in size in both sexes, the length varying from 7—9½ mm. The thorax in this species is of the same form in both sexes, and is not at all explanate at the sides. The swollen terminal joints of the tarsi in the ♂ are characteristic.

Loc. Aldabra: 1908—9 (Fryer), and 1893 (Abbott). ? Seychelles: a single ♀ is labelled "Mahé" (1905), but I doubt whether a wrong label has not been attached to it. Madagascar: Kolbe (*l.c.*) had seen no specimens from Aldabra, but had seen some collected in the N. of Madagascar by Voeltzkow which agreed with the description of *P. insularis*.

Dynastini.

Lonchotus Burmeister, Handb., v. 1847, p. 173.

13. *Lonchotus astovensis*, Arrow.

Lonchotus astovensis Arrow, Ann. Mag. Nat. Hist., ser. 8, vii. 1911, p. 88.

Not obtained by the Percy Sladen Trust Expeditions.

Loc. Astove Island: 2 specimens, in Brit. Mus. (R. P. Dupont).

Temnorrhyncus Hope, The Col. Man., 1837, i. p. 93.

14. *Temnorrhyncus truncatus* (Klug).

Geotrupes truncatus Klug, Ins. Madag., Abh. Ak. Wiss. Berlin, 1832, i. p. 165.

Temnorrhyncus truncatus Alluaud, Liste Colćopt., p. 249.

There is a single specimen of this genus, a ♂, 12 mm. long. It is very small indeed for *T. truncatus*, but by comparison with that and other species in the British Museum I have not been able to find any structural character separating it from *T. truncatus*. The specimen is dark reddish-brown and strongly shining; the frontal plate is transverse, with a slight transverse carina on its lower (anterior) part, and with its upper border rounded and bearing a very obsolete tubercle at the summit; the thorax is quite impunctate, with a well-marked rounded median depression anteriorly (but with no tubercle behind this depression), and with the posterior portion very slightly depressed medially.

From its small size and general form this specimen bears a strong superficial resemblance to the W. African *T. repandus*, which species however is at once distinguished by its tall narrow frontal plate emarginate at the summit.

Loc. Assumption Island, 1909 (Dupont). Madagascar.

Oryctes Illiger, Käf. Preuss., 1798, p. 11.

15. *Oryctes monoceros* (Olivier).

Scarabæus monoceros Olivier, Ent., i. 3. 1789, p. 37, Pl. 13, fig. 122.

Oryctes monoceros Alluaud, Liste Colćopt., p. 250; Linell, Proc. U. S. Mus., xix. 1897, p. 697; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 23.

14 males, 11 females, from cultivated places; the larvæ are found in decaying stems of coconut-palms. This species (locally spoken of as "bœuf banane") is stated to be injurious both to coconut trees and bananas (see Kolbe, *l.c.*). There is great variation in both sexes in actual size, in relative proportion of length to breadth, etc.

Loc. Seychelles: Mahé, Silhouette, Praslin, Dennis Island, Frigate Island (1905 and 1908—9). Amirantes: St Joseph Island, 1905. Obtained by Abbott in Mahé and the Amirantes, and by Brauer in cultivated places in Mahé. Also Tropical Africa.

Melolonthini.

Nesohoplia, gen. nov. (Pl. **12**, figs. 3—9).

♂♀. Corpus angustum, supra squamis elongatis angustis adpressis vestitum. Clypeus haud attenuatus, margine anteriore fere recto. Antennæ 9-articulatæ. Maxillæ lobâ superiore haud robustâ, laminatâ, apice bidentato. Mentum elongatum, suboblongum, ad bases palporum vix constrictum, margine anteriore haud emarginato. Prothorax antice fortiter angustatus, angulis posticis acutis, basi medio in angulum producto. Scutellum minimum. Abdominis segmenta ventralia haud contracta. Tibiæ anticæ bidentatæ, dente proximali fere obsoleto, dente apicali obliquo; calcare nullo. Tibiæ mediæ posticæque unicalcaratæ, posticæ haud incrassatæ.

♂. Tarsi omnes unguibus 2 inæqualibus, compressis, apice fissis.

♀. Tarsi antici et medii unguibus 2 inæqualibus, apice unguis externi fisso, apice unguis interni haud fisso. [♀ Tarsi postici desunt.]

Body narrow, clothed fairly densely above (clypeus excepted) with long narrow adpressed scales.

Mentum (Pl. **12**, fig. 7) about $\frac{3}{5}$ as broad as long, suboblong, towards the base rather broader with sides rounded, not sharply constricted but with the sides only sinuate at the point of insertion of the palps, the front margin sinuate but not sharply emarginate in the middle, the anterior angles rounded and bearing hairs: apical joint of labial palpi about twice as long as the second. Maxillæ (Pl. **12**, fig. 6) with the upper lobe not very robust, a subquadrate plate with two tooth-like projections at its upper and inner angle: apical joint of maxillary palpi swollen and fusiform, nearly as long as the second and third together. Mandibles (Pl. **12**, fig. 5) with a strongly-chitinised apical tooth and a delicate inner membranaceous portion. Labrum (Pl. **12**, fig. 4) almost horizontal, broad and short, with the front margin slightly sinuate medially. Antennæ 9-jointed, 6th joint very short; the club (joints 7—9) as long as joints 2—6 taken together, the lamellæ of joints 7 and 9 convex outwardly, when closed almost concealing the slightly shorter middle lamella (joint 8). Clypeus short and somewhat broad, with its anterior margin nearly straight, not emarginate, reflexed, the angles rounded off; its surface slightly concave, with only few very small hairs, devoid of the conspicuous scaly covering of the rest of the head and body. Prothorax broader than long, strongly narrowed in front, produced in the middle of the base into an angle (covering the base of the scutellum). Scutellum very small, ovate, with apex angular. Elytra slightly narrowed behind the middle, separately rounded at the apex. Pygidium vertical, ventral abdominal segments not contracted in either sex. Middle and posterior coxæ contiguous, the posterior transverse and projecting slightly at the sides of the abdomen. Anterior tibiæ bidentate, the proximal tooth very little developed, the apical one well-developed and oblique: apical spur absent. The middle and posterior tibiæ have each a single apical spur about as long as the first tarsal joint: posterior tibiæ somewhat broader than the middle ones, but not greatly swollen or thickened as in some genera.

In the ♂ *all* the tarsi have 2 claws, both of which are cleft at the apex, the larger one specially broad and flattened (Pl. **12**, fig. 8). I have only seen one ♀, from which the

posterior tarsi unfortunately are broken off; in it the anterior and middle tarsi have each two claws, shorter and less flattened than in the ♂, the larger one rather deeply cleft, the smaller not cleft at all (Pl. **12**, fig. 9).

Type of the genus: *Nesohoplia senecionis*, sp. nov.

I feel doubt as to whether certain characters of this insect are to be regarded as generic or specific; and also as to the systematic position of the genus. According to Péringuey's classification of the S. African Hopliini (Tr. S. Afr. Phil. Soc. xii. 1901—2, p. 624) it would appear to fall into the group Scelophysides. In claw-structure and some other points it somewhat resembles *Platychelus* (see *op. cit.* pp. 798, 802), but differs from it widely in the form of the mentum and maxillæ; neither does the general form of the body seem to approach that of *Platychelus*. In superficial appearance and nature of its setose-squamose covering *Nesohoplia* somewhat resembles certain unnamed Hopliini from Madagascar in the British Museum: but from these it differs absolutely in claw-structure, etc. It does not appear to be very close to any of the various genera described from the Madagascar region; and Dr Sicard, to whom specimens were sent, informs me that he could find nothing like it in the collections from that region in Paris.

16. *Nesohoplia senecionis*, sp. nov. (Pl. **12**, figs. 3—9).

♂. Piceo-ferruginea vel picea, nitida, supra squamis pallide griseo-flavescentibus sat dense vestita; capite dense subrugose punctato; prothorace circa $\frac{1}{5}$ latiore quam longo, antrorsum fortiter angustato, angulis anterioribus fere rectis, lateribus rotundatis pone medium leviter sinuatis, angulis posticis acutis, basi medio in angulum acutum productâ, utrinque leviter bisinuatâ, disco sat dense haud profunde punctato; elytris dense subrugose punctatis, setis erectis tenuibus parcis seriatim inter squamas positis. Long. corp. 6—7 mm.

♀. Major, robustior, prothorace elytrisque minus dense punctatis. Long. corp. 8 mm.

The clypeus is clearly marked off from the rest of the head; its punctuation is slightly different, and it is almost bare, the scales (which clothe the rest of the head, and the prothorax and elytra) being represented on it only by very small fine hairs. The form of the prothorax is characteristic: its front and side margins bear erect outstanding hairs. The adpressed scales arise from the punctures, which on the thorax and elytra are fairly dense but not deep; the punctuation of the elytra is also subrugose. The elytra are slightly narrowed behind the middle; they bear in addition to the scales 2 or 3 rather irregular series of a few fine erect hairs placed far apart. Wing twice as long as the elytron. Metasternum with a slight median longitudinal depression which is absent near the anterior margin. Pygidium bearing procumbent pale yellowish hairs, metasternum and abdominal segments procumbent whitish or pale yellowish hairs. The tibiæ bear erect yellowish hairs. The single ♀ is in bad condition, most of the scaly and hairy clothing being rubbed off: it is large and dark in colour, and has the thoracic and elytral punctuation less close than in the ♂, besides differing from the ♂ in the claw-structure as mentioned in the description of the genus.

25 specimens. I frequently beat this insect from the precinctive species of bush-groundsel *Senecio sechellensis*, after which I have named it.

Loc. Seychelles. Silhouette: plateau of Mare aux Cochons and near by, over 1000 ft., VIII.—IX. 1908, 14 ♂ collected by Gardiner and Scott. Mahé: Cascade Estate, about 1000 ft., XII. 1908, 1 ♂; near Morne Blanc, 1908, 1 ♂; 1 ♀, 1905 (Gardiner). Also 8 other ♂ collected by J. A. de Gaye, exact locality not specified.

COMASERICA Brenske, Berlin. Ent. Zeitschr., xliv. 1899, p. 263 (and table, p. 235; also table, *op. cit.* xlii. 1897, p. 356).

In this genus of Sericinæ, among other characters, the anterior tibiæ are bidentate; the antennæ 9-jointed, with 3 lamellæ in both sexes; the mentum convexly elevated, the convexity flattened in front; the thorax has the hind angles rounded off; the upper surface has setiferous punctures distinct from ordinary punctures; there is no mesosternal process between the middle coxæ, and the metasternum is not impressed in the middle; the posterior femora are broad at their bases, narrowed towards the apex; the posterior tibiæ cut off obliquely on the inner side at the apex; the claws of the tarsi are cleft.

The genus is well defined, and so far known only from Madagascar.

17. *Comaserica granulipennis* (Fairmaire).

Homaloplia granulipennis Fairmaire, Ann. Soc. ent. Belgique, xli. 1897, p. 376.

Serica granulipennis Alluaud, Liste Coléopt., p. 258.

Comaserica granulipennis Brenske, Berlin. Ent. Zeitschr., xliv. 1899, p. 266.

A series of about 34 ♂ and 28 ♀ was collected in Aldabra by Mr Fryer. Specimens were sent to Herr Kapitän Moser, who informed me that the species is distinct from any in Brenske's collection, but suggested that it might be identical with that named by Fairmaire *granulipennis* and placed by him in *Homaloplia*. I therefore sent specimens to Monsieur Lesne, who compared them with Fairmaire's type of *H. granulipennis* at the Paris Museum, and informed me that he considers them identical with that species. He states that the only difference he was able to see lay in the size of the granules at the bases of the setæ on the elytra, which granules are larger and more marked in the type than in the Aldabra specimens. Fairmaire described the elytra as "parsemées de petites soies grises très courtes et de soies fauves plus longues et hispides." The "hispid yellow hairs" are obvious enough, but what is meant by the "very short little grey hairs" I do not know; they are not present in any of the Aldabra specimens. As Fairmaire's description is not very full, I subjoin the following, made entirely from the series of Aldabra specimens before me:

Length $5\frac{3}{4}$—$6\frac{3}{4}$ mm.; breadth $3\frac{3}{4}$—$4\frac{1}{4}$ mm. Ovate, broadening behind; unicolorous reddish-brown, some specimens much darker and a few paler; lamellæ of antennæ testaceous, in ♂ about twice as long as joints 1—6 together, in ♀ about as long. Body dull, sometimes with pearly opalescence (but not with coppery sheen), except the clypeus and part of the frons and the tibiæ and tarsi, which are shining; bearing numerous pale yellowish setæ erect or leaning backwards. Clypeus about $\frac{2}{3}$ as long as its breadth at the

base; anterior margin only about ½ as broad as the base, reflexed, straight or slightly sinuate in the middle, the angles and sides rounded; surface slightly elevated in the middle, densely and rather coarsely punctured with some setiferous punctures. Frons just above the suture shining, and with a group of strong setiferous punctures on either side; upper part of head dull and more finely punctured. Prothorax over 1½ times as broad as long, rather narrowed in front, finely margined, the sides rounded and hind angles rounded right off, the base sinuate on either side of the middle and the median portion margined with closely-placed minute hairs; surface finely punctured, distinct setiferous punctures numerous, especially along the front and side margins, setæ along the side margins specially conspicuous and outstanding. Scutellum with punctures bearing small hairs. Elytra at the base about as broad as the thorax, behind the middle about 1½ times as broad as the thorax; striæ rather broad, alternate ridges a little more elevated, but none of the ridges are sharply defined or more than slightly elevated. Ridges impunctate, but striæ bearing numerous fine punctures, so that the elytron as a whole appears densely punctured; setiferous punctures forming a regular series along the inner edge of each stria, placed rather close together in the series and each having a little granule or prominence in front of it. Apical angle of each elytron bearing a small group of setæ. Pygidium bearing numerous setæ, larger and smaller; its sides strongly converging, apex subtruncate. Hind coxæ bearing long setæ near the base, hind femora bearing short setæ on the surface and a rather close series along the hind margin. Abdominal segments each with two irregular transverse rows of setæ. 1st joint of hind tarsus a little shorter than joints 2 and 3 together; inner apical spur of hind tibia situated further forward than the base of the tarsus, over ½ as long as the 1st tarsal joint.

Loc. Aldabra: Takamaka, XI. and XII. 1908; some are recorded as having come to light (Fryer). Madagascar: Diego Suarez.

Perissosoma Waterhouse, Ann. Mag. Nat. Hist., ser. 4, xv. 1875, p. 409.

18. *Perissosoma ænescens*, Waterhouse.

Perissosoma ænescens Waterhouse, *op. cit.* p. 410; Alluaud, Liste Coléopt., p. 269; Linell, Proc. U. S. Mus., xix. 1897, p. 703; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

Perissosoma tenuitarse Fairmaire, Bull. Soc. ent. France, 1895, p. cclxxviii; Alluaud, *loc. cit.*; Kolbe, *loc. cit.*

67 specimens, all males; they agree closely with specimens of *P. ænescens* in the British Museum. Examples were sent to Dr A. Sicard, who compared them with specimens of *P. tenuitarse* at Paris; he informs me that the two species are identical, and therefore the name *tenuitarse* must give way to *ænescens*. Fairmaire stated that the club of the antenna of the ♂ *P. tenuitarse* is formed of 3 lamellæ; but Waterhouse describes the club of the antenna of the ♂ *P. ænescens* as being composed of 4 lamellæ, which it certainly is in the British Museum specimens, and in my specimens, all of which I have examined. It appears therefore that Fairmaire was mistaken as to the number of lamellæ.

I have seen no female of this species. Fairmaire describes the ♀ of *P. tenuitarse* as

" magis crassa, elytris piceis, sat fortiter punctatis, suturâ valde elevatâ, utrinque costis 2 sat elevatis," and states that it differs much from the ♂, and has the club of the antenna composed of 5 lamellæ.

There is slight variation in size etc. in the series. Length varies from 9—11 mm. Some specimens are shining black, others are more bronze-coloured, in a few the elytra are pitchy-ferruginous : all are strongly shining with a brassy lustre. I have measured the wings and elytra in 3 specimens and found the length of the former averaging about twice that of the latter.

Loc. Seychelles. Mahé : various localities, mostly about 1000 feet, X. 1908—II. 1909. I first met with this species on Oct. 17th, 1908, at an elevation of about 1000 ft., while descending the road from Capucin to Port Victoria ; over a large part of the way specimens were flying rapidly, low over the road, occasionally settling on the scented lemon-grass planted by the wayside ; the afternoon was dull and extremely damp after much heavy rain. Some of the specimens were obtained earlier, 1905—1907 (Thomasset, Gardiner, de Gaye). The species was previously taken in Mahé by Alluaud and P. Wright. According to Linell (*l. c.*) it was found in Glorioso Island by Abbott.

19. *Perissosoma grande*, sp. nov.

♂. Piceo-ferrugineum, ænescens, nitidum ; *P. œnescente* multo majus, latius, minus depressum ; capite crebrius punctato, antice minus impresso, vertice unituberculato, clypeo antice magis rotundato ; antennarum clavis 3-lamellatis ; thorace subtilius punctato, lateribus medio magis rotundatis ; elytris fortius punctatis. Long. corp. $11\frac{3}{4}$—13 mm.

Distinguishable at once from *P. œnescens* ♂ by its much greater size, much less depressed form, and greater proportionate breadth ; by the clubs of the antennæ being composed of 3 instead of 4 lamellæ ; by the head being much less strongly impressed, with its front margin more rounded, and by its possessing a small but quite distinct tubercle on the vertex.

The colour is brownish-bronze, as opposed to the blackish-bronze of *P. œnescens*. Clypeus densely punctate, its punctuation rather subrugose ; the line of division between it and the frons distinct. Rest of the head fairly strongly punctate, the punctuation becoming finer on the posterior part. Thorax very finely punctured, its sides more rounded and less nearly subangulate in the middle than in *P. œnescens*. Elytra proportionately shorter than in *P. œnescens* : as in that species, each has a distinct stria near the suture, the space between it and the suture being impunctate ; the remainder of the elytron is rather irregularly striate-punctate, with the interstices not very closely punctate ; the punctures are all very distinct, and larger and stronger than in *P. œnescens*. Wing nearly twice as long as the elytron. Pygidium more closely and finely punctured than in the preceding species.

I have seen 3 specimens, all males. Two were obtained by our expedition, the third was obtained earlier, by Mr R. P. Dupont, and is in the British Museum. My two specimens differ greatly in size, but agree in all characters that separate *P. grande* from *P. œnescens*. Unfortunately only one specimen has the antennæ intact, but in that one they are quite perfect. I at first thought this must be the ♂ of *P. tenuitarse* Fairmaire ;

but Dr Sicard and Monsieur Alluaud, after examining specimens, both state without hesitation that *P. tenuitarse* is identical with *P. œnescens*, and that *P. grande* is new.

Loc. Seychelles. Praslin: from Coco-de-Mer Forest in the Vallée de Mai, Côtes d'Or Estate, XI. 1908, 1 ♂ (Type) collected by R. P. Dupont. Félicité, XII. 1908, 1 ♂.

Rutelini.

Parastasia Westwood, Ann. Mag. Nat. Hist., ser. 1, viii. 1841, p. 204.

20. *Parastasia coquereli*, Fairmaire.

Parastasia coquereli Fairmaire, Ann. Soc. ent. France, ser. 4, viii. 1868, p. 789; Linell, Proc. U. S. Mus., xix. 1897, p. 696; Alluaud, Liste Coléopt., p. 269; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 23.

12 males and 2 females were obtained. There is considerable variation in the colouring of the elytra: in most cases there is a lighter (yellowish-brown) patch at the base of the elytron, sharply marked off from the dark remaining portion; but in some specimens the lighter colour is spread over almost the whole elytron. These colour-differences are not dependent on sex. Dissection of two of the specimens with sharply-marked basal patches has shown one to be ♂, the other ♀; and it has also shown that the two specimens in my series with the most uniformly light-coloured elytra are both males. The lamellæ of the antennal club are longer in the male than in the female. The thorax in the male is broader in the basal portion and more abruptly narrowed before the middle, the sides being subangulate at the middle, whereas in the female they are much more gradually rounded from the posterior to the anterior angle.

Loc. Seychelles. Mahé: 2 ♂ which came to light near Morne Blanc, about 800 feet, X. 1908; 2 ♂ from Cascade Estate, II. 1909; 7 ♂ and 1 ♀ which came to light at Port Victoria on a rainy night, II. 1909: also 1 ♂ and 1 ♀ obtained by the "Sealark" Expedition (1905). Previously obtained in Mahé by Coquerel, Alluaud, and Abbott, and in La Digue by Alluaud.

Adoretus Castelnau, Hist. Nat. Col., ii. 1840, p. 142.

21. *Adoretus versutus*, Harold (Pl. **12**, figs. 10—12).

Adoretus versutus Harold, Coleopt. Hefte, v. 1869, p. 124; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

Adoretus vestitus Boheman (*nec* Reiche), Eugenies Resa, ii. 1. 1858, p. 56.

Adoretus insularis Fairmaire, Ann. Soc. ent. Belg., xli. 1897, p. 105; Alluaud, Liste Coléopt. p. 271.

I am indebted to Dr F. Ohaus for kindly determining this species; he tells me that the specimens which I sent to him are absolutely identical with a specimen of *A. versutus* from St Helena, which is in his possession. Also Dr Sicard, who kindly compared specimens with those in Fairmaire's collection, informed me that they are identical with *A. insularis* of that author. Therefore the name *insularis* must become a synonym of *versutus*.

I have about 22 males and 19 females from the Seychelles, and 5 females from the Chagos. There is considerable variation: length varies from 9½ mm. (an exceptionally small ♂) to over 11 mm. The females are proportionately broader, and darker in colour. In the ♂ the clypeus is shorter, with its front margin more nearly straight; in the ♀ it is proportionately longer, with more rounded margin. In the ♂ the larger claw of the front and middle tarsi is so slightly cleft at its apex that, unless looked at from a certain position (Pl. **12**, fig. 10 *a*) it appears not to be cleft at all; in the ♀ it is distinctly cleft (Pl. **12**, fig. 11). In the ♂ also the larger claw of the *middle* tarsus has a sharp indentation near its base (Pl. **12**, fig. 10). The ♂ genital apparatus is asymmetrical (Pl. **12**, fig. 12, *a*, *b*) at the apex, the left-hand piece being the larger and quite differently formed to the right-hand one. I have dissected it out in five specimens and found it exactly the same in all of them.

This species eats the leaves of rose-trees in the gardens at Port Victoria at night, and can then often be attracted to a lantern and caught. I am indebted to Monsieur de Gaye for showing me how thus to take it in numbers. Specimens numbered "207" were obtained thus on the night of 9. II. 1909.

Loc. Seychelles. Mahé: Port Victoria; Cascade Estate 800—1000 ft., 1 ♀; several specimens, 1905: previously obtained in Mahé by Alluaud, and by Brauer (Mamelles plantation, June—July). Silhouette, 1 ♀, VIII. 1908. Praslin, 1 ♀ from Coco-de-Mer forest in Côtes d'Or Estate, XI. 1908. Félicité, 1 ♂, XII. 1908.

Chagos Islands; Egmont Atoll, 5 ♀ and 1 ♂, 1905.

The species was first described from St Helena. Dr Ohaus states that it occurs throughout the Oriental Region (India, China, Samoa, Fiji, etc.) and is described under several names. There are specimens from Mauritius in the British Museum.

[*Adoretus umbrosus* (Fabricius).

Melolontha umbrosa Fabricius, Ent. Syst., i. 2. 1792, p. 169.

This species is recorded by Linell (Proc. U. S. Mus., xix. 1897, pp. 696 and 703) as having been obtained by Abbott in the Seychelles and in Glorioso Island. The nomenclature of some species of *Adoretus* seems to be in confusion, so that there may be some uncertainty as to which one Linell had before him. Judging, however, by information received from Dr Ohaus, it appears unlikely that it was the true *umbrosus* of Fabricius. No other species besides *A. versutus* was obtained in the Seychelles by Alluaud, Brauer, or myself.]

Cetoniini.

Oxycetonia Arrow, Fauna Brit. India, Lamellicornia, part I, 1910, p. 163.

22. *Oxycetonia versicolor* (Fabricius).

Cetonia versicolor Fabricius, Syst. Ent., 1775, p. 51.

Glycyphana versicolor Alluaud, Liste Coléopt., p. 293; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 23.

Oxycetonia versicolor Arrow, Fauna Brit. India, Lamellicornia, part I, 1910, p. 164.

54 specimens. 53 belong to var. *d* (=*variegata* Fabricius, or *luctuosa* Gory et Percheron), that is, they are entirely black and opaque, with white markings. The remaining 1 specimen (from Chagos Islands) belongs to var. *b* (=*cruenta* Pall.), being opaque, and with the black replaced by red on the thorax (except for a pair of black discoidal spots) and over all the middle part of each elytron.

Loc. Chagos Islands: Peros Banhos Atoll, 1905, many var. *d* and one var. *b*. Amirantes: Desroches and Poivre Islands, 1905. Coetivy, 1905. Farquhar Atoll, 1905. Seychelles: Mahé, 1905 and 1908—9. This species was found over the whole area visited by the Expedition, the Aldabra group excepted. In the Seychelles it is not found in the endemic mountain-forests. Well-known from India, Madagascar, and the Mascarene Islands; var. *d* is apparently confined to Ceylon and the Madagascar area.

PROTÆTIA Burmeister, Handb. Ent., iii. 1842, p. 472.

23. *Protætia aurichalcea* (Fabricius).

Cetonia aurichalcea Fabricius, Syst. Ent., 1775, p. 49.

Cetonia maculata Fabricius, Spec. Ins., i. 1781, p. 58; Alluaud, Liste Coléopt., p. 294.

Protætia maculata Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 23.

Protætia aurichalcea Arrow, Fauna Brit. India, Lamellicornia, part I, 1910, p. 143, Pl. 1, fig. 7.

Loc. Amirantes: Desroches and Eagle Islands, large numbers, 1905. Seychelles: Mahé, 1905 and 1909; Dennis Island, 1908 (Fryer); Praslin, 1 specimen, 1905; Frigate Island, 1 specimen, 1905; Marie Anne Island, from plantation, several specimens, 2. XII. 1908 (Dupont). Not found in the endemic mountain-forests. Previously collected in the Seychelles by Alluaud and Brauer. India, Mauritius, Réunion.

OXYTHYREA Mulsant, Coléopt. de France, Lamell., 1842, p. 572.

Leucocelis Burmeister, Handb. Ent., iii. 1842, p. 421.

It is pointed out by Arrow, in a footnote to p. 175 of the volume (1910) on Cetoniinæ and Dynastinæ in the Fauna of British India Series, that Mulsant's name for this genus was published earlier in the year 1842 than that proposed by Burmeister.

24. *Oxythyrea aldabrensis*, Linell.

Oxythyrea aldabrensis Linell, Proc. U. S. Mus., xix. 1897, p. 700; Alluaud, Liste Coléopt., p. 293.

Leucocelis aldabrensis Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 575.

Linell states that this species is allied to the S. African *O. marginalis* Swartz. It was discovered in Aldabra by Abbott, and subsequently found there by Voeltzkow. We have a large series.

Loc. Aldabra: Picard Island, I. 1909 (Fryer); 1907 (Thomasset). Cosmoledo; several specimens, 1907 (Thomasset).

It is of interest to note that a quite distinct species, *Oxythyrea abbotti* Linell (*op. cit.* p. 703), was discovered by Abbott in Glorioso Island.

MAUSOLEOPSIS, Lansberge.

Mausoleopsis Lansberge, C. R. Soc. Ent. Belgique, 1882 (*February*), p. 29.

Microthyrea Kraatz, Deutsche Ent. Zeitschr., 1882 (*April*), p. 76.

In this genus there is a tubercle, bearing a spiracle, on either side of the body at the posterior margin of the 5th ventral abdominal segment.

As pointed out by Kolbe (Stettin. Ent. Zeit., 1895, p. 287), Lansberge's name should be used for this genus as it was published a little before the name proposed by Kraatz.

25. *Mausoleopsis aldabrensis* (Linell).

Microthyrea aldabrensis Linell, Proc. U. S. Mus., xix. 1897, p. 700; Alluaud, Liste Coléopt., p. 293.

? *Microthyrea providenciæ* Linell, *l.c.* p. 705; Alluaud, *l.c.*

Elassochiton selika var. *aldabrensis* Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 574.

The sexual characters in this species are very distinct. In the ♂ the claws of the front tarsi are unequal, the external one much longer, somewhat contorted, and slightly incrassate in the middle; in the hind legs, the femora are strongly curved, the tibiæ slightly incrassate with a groove on the inner surface and short apical spurs; ventral abdominal segments 1—4 have a well-marked median group of close fine punctures; and the pygidium has its apex truncate with rounded angles. In the ♀ the anterior tarsal claws are equal, the posterior femora nearly straight, posterior tibiæ not incrassate nor grooved, with apical spurs much longer and bigger than in the male; the ventral segments have no median group of punctures; the pygidium has its apex rounded, narrower.

M. aldabrensis was described from 3 ♀ from Aldabra, and *M. providenciæ* from 2 ♂ from Providence Island. The description of the male characters of *M. providenciæ* agrees with the male characters of specimens from Aldabra. In fact, according to the description, *M. providenciæ* only differs from males of *M. aldabrensis* in having the sides of the thorax "sinuate behind the middle" and a few punctures on the scutellum: in some of the Aldabra males before me there is a faint trace of sinuation of the sides of the thorax behind the middle, but I have not observed any specimens with punctures on the scutellum. It seems extremely probable that *M. providenciae* is really the male of *M. aldabrensis*; this probability is heightened by the fact that *M. aldabrensis* appears to be widely-spread in the coral-islands of this region, there being specimens in the British Museum from Aldabra, Astove, and St Pierre.

Professor Kolbe treats *M. aldabrensis* as a variety of *M. selika* Raffray, which he refers to (*l.c.*) under the name of the subgenus *Elassochiton*. Raffray's species was described as *Oxythyrea selika*, Rev. Mag. Zool., 1877, p. 332, from Zanzibar and E. Africa: I have examined specimens of it in the British Museum. *M. selika* and *M. aldabrensis* are certainly distinct, though closely-allied, forms: whether the latter should be treated as a different species or only as a variety of the former is not easy to decide. The specimens of *M. selika* in the British Museum are smaller than most of the *M. aldabrensis* before me, though the length of the species as given by Raffray varies considerably, and

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that of the *M. aldabrensis* before me from 10—13 mm. *M. selika* has the white markings more numerous: in it the anterior marginal spot on the elytra is divided into two, and there are 4 small spots on the disc of the thorax, as well as the 6 large marginal ones: in most of the *M. aldabrensis* these 4 small spots are absent. In *M. selika* the head is more densely punctured and the smooth space on the vertex much reduced or practically absent; the thoracic punctures are a little more numerous; the ventral abdominal segments have more numerous punctures in both sexes, and the close median grouping of fine punctures in the ♂ is less marked: the pygidium is subcarinate in the middle and slightly depressed on either side, while in *M. aldabrensis* the median elevation is often slightly less marked. Alluaud in his "Liste Coléopt." in footnote (2) on p. 293, states that *M. aldabrensis* might be a synonym of *Oxythyrea clouei* Blanchard: I have however read Blanchard's description and seen specimens agreeing with it, and have no doubt that *O. clouei* is absolutely distinct.

Loc. Aldabra, Astove, Assumption, Cosmoledo, St Pierre, Providence (?). About 50 specimens: Aldabra, Esprit and Picard Islands, XII. 1908 and I. 1909 (Fryer); Assumption, IX. 1908 (Fryer); Aldabra and Cosmoledo, 1907 (Thomasset). The specimens from Astove and St Pierre, and one from Wasin Island (on the coast of Brit. E. Africa), are in the British Museum.

ADEPHAGA.

*30 species of Adephaga are here enumerated from the islands visited by the Percy Sladen Trust Expedition. 26 of these are actually represented in the collections formed by the Expedition: one more (*Hypolithus pavoninus*) is doubtfully represented: while the remaining 3 (*Pentagonica mahena*, *Laccophilus addendus* and *Bidessus peringueyi*) were found in the islands by previous collectors, but not by the Expedition. 17 species were previously known, so that the list is now increased by 13 species, 4 of which are new to science. The 30 species are representative of 20 genera. The Cicindelidæ are represented by two distinct forms of a single species of *Cicindela*: the Carabidæ by 13 species belonging to 10 genera: and the Dytiscidæ by 16 species belonging to 9 genera.

Distribution within the area of the Expedition.

As in the case of the Lamellicornia, I have adopted the form of a table to demonstrate the "internal" distribution of the species. I would also again refer to those characteristics which distinguish the Seychelles from all the other islands in question, and which were briefly mentioned on p. 217. In the following table it has been necessary to add a special column for the island of Coetivy: this is a small low island of coral-formation, which lies close to the South of the Seychelles, but which does not stand on the Seychelles Bank.

* The number is actually 31, since in addition to those mentioned above, there is from Aldabra a single specimen of a quite distinct kind of Carabidæ. It is, however, in such bad preservation that neither its species nor its genus can be determined, and it is therefore left out of account in these introductory remarks.

Before the names of the species:

* indicates that the species is new to science,

† indicates that the species is recorded from these islands for the first time.

	Seychelles Group	Coetivy	Chagos Group	Amirantes Group	Farquhar Group	Aldabra Group (incl. Aldabra, Astove, Assumption and Cosmoledo)
Cicindela melancholica trilunaris						—
Cicindela melancholica seychellensis	—				—	
†Ophionea sp.	—					
†Pheropsophus humeralis						—
Tetragonoderus bilunatus	—	—		—	—	—
Pentagonica mahena	—					
Chlænius bisignatus	—					
Hypolithus pavoninus						—
Hypolithus sechellarum	—	—		—	—	
†Hypolithus pulchellus						—
Dioryche interpunctata		—				—
Stenolophus fulvipes	—			—		
†Tachys bibulus	—					—
*Tachys seychellarum	—					
†Anillus sp.	—					
Canthydrus notula						—
Laccophilus posticus						—
Laccophilus addendus						—
†Hydrovatus humilis						—
†Bidessus thermalis			—			
†Bidessus capitatus						—
*Bidessus farquharensis					—	
Bidessus peringueyi	—					
†Bidessus sp.						—
Hyphydrus impressus						—
*Copelatus gardineri	—					
*Copelatus pandanorum	—					
Copelatus pulchellus						—
Hydaticus leander	—	—				
Eretes sticticus						—
Cybister tripunctatus						—

The following facts can be summarized from the above table:

The single species of *Cicindela* occurs, under two slightly different forms, in the Seychelles, the Farquhar Group, and the Aldabra Group: the Seychelles form is described for the first time in this paper, and I am obliged to refer to it the single specimen from Farquhar, though one would rather expect specimens found in that group of islands to belong to the form that is found in Aldabra.

9 species of Carabidæ have been found in the Seychelles, and 6 in Aldabra. Only 2 species (*Tetragonoderus bilunatus* and *Tachys bibulus*) have been found both in the Seychelles and in Aldabra, and one of these (*Tetragonoderus bilunatus*) occurs also in Coetivy, the Amirantes, and the Farquhar Group. 2 other of the species found in the Seychelles (*Hypolithus seychellarum* and *Stenolophus fulvipes*) occur also in some of the other islands, though they have not been found in the Aldabra Group: and one of the Aldabra species (*Dioryche interpunctata*), though it has not been found in the Seychelles, has yet been found in the neighbouring island of Coetivy.

No representative of either Cicindelidæ or Carabidæ has yet been found in the Chagos Islands.

Only 4 species of Dytiscidæ have been found in the Seychelles, while 10 species occur in Aldabra. Not one of the 10 Aldabra species has been found in any of the other islands. Only one of the Seychelles species has been found in any of the other islands, namely the very wide-spread *Hydaticus leander*, which occurs also in Coetivy. A single species (*Bidessus farquharensis* sp. nov.) has been found in the Farquhar Group, and a single one (*Bidessus thermalis*) in the Chagos, the latter being the only form of Adephaga known to occur in that group of islands.

External Distribution.

It is again convenient to consider the general distribution and affinities under two principal heads, namely (A) the fauna of the Seychelles, and (B) the fauna of Aldabra. To these must also be added a third head (C) including two species not known to occur in either of those groups, but known from the Chagos and Farquhar Groups respectively.

A. Seychelles. *Cicindela melancholica* is a widely distributed species, occurring under various different forms (subspecies, varieties, etc.) in Southern Europe, Africa, and Madagascar. The form found in the Seychelles is closely related to subsp. *trilunaris* Klug, which occurs in Madagascar, East Africa, and Aldabra, and I hear from Dr W. Horn that var. *seychellensis* is also related to var. *perplexa* Dejean, which was first described from Réunion.

With the possible exception of *Tachys seychellarum* and *Anillus* sp., it may be said that no truly endemic Carabidæ are known from the Seychelles. During the greater part of 8 months I collected constantly, and by many and various methods, in the endemic mountain-forests, and Carabidæ seemed to be conspicuous only by their entire absence. Those species which are found in the islands occur in the cultivated country, often near the coast, and several of them are found in certain of the coral-islands in the same region. 3 of the species (*Tetragonoderus bilunatus*, *Chlænius bisignatus*, and *Tachys bibulus*) are Madagascar-Mascarene species; one of them, *Chlænius bisignatus*, is stated by Professor Kolbe (Mitt. Zool. Mus. Berlin, v. 1910, p. 17) to be closely related to certain African *Chlænii*. *Hypolithus seychellarum* too, which occurs not only in the Seychelles but also in the Amirantes and Farquhar Groups, is closely related to certain African and Madagascan species. *Stenolophus fulvipes* has not been recorded from Madagascar, but occurs in the Comoros and in parts of Africa as distant from one another as Mozambique and Angola. Kolbe (*op. cit.* p. 18) writes that *Pentagonica mahena* is one of a number of very similar species, and that the genus *Pentagonica* occurs in Madagascar, Africa, South and East Asia, Australia, New Zealand, Tropical America, etc. Nothing can be said as to the affinities of the undetermined *Ophionea*, or of the minute *Tachys seychellarum*, which latter is possibly indigenous and peculiar to the Seychelles. The presence of the extremely minute, blind and wingless *Anillus* is most interesting, and it is to be hoped that further material of it may be obtained, so that its species can be determined. Species of *Anillus* have been discovered in variously widely-separated parts of the world,

such as France and California. Certain apparently allied genera (*Nesomicrops* and *Macranillus*) occur in the Hawaiian Islands (see Sharp, Fauna Hawaiiensis, vol. iii., part iii. 1903, pp. 286—7, etc.). The preponderance of affinities of the Seychelles Carabid-fauna is therefore seen to be with Madagascar and Africa.

In the case of the Dytiscidæ, the Seychelles possess, in the 2 species of *Copelatus* (*C. gardineri* and *C. pandanorum*), a truly endemic element in their fauna. Both of these are found in the high parts of the islands. *C. gardineri*, which is practically the only water-beetle found in the streams in the mountains, may possibly be related to certain Madagascar species; but I have not been able to find any species closely related to *C. pandanorum*, which is attached in a very special manner to certain endemic trees (see p. 259*). With regard to the other two Dytiscidæ found in the Seychelles, *Bidessus peringueyi* is an Afro-Madagascan species, while *Hydaticus leander* is very widely distributed (South Europe, Africa, Syria, Madagascar).

If the Adephagan fauna of the Seychelles be compared with the Lamellicorn-fauna of those islands (*ante*, p. 218), certain differences are apparent. In the Adephaga, the truly endemic element is proportionately smaller: the relationships of the non-endemic species do not point in so many directions, but are predominatingly Madagascan and African; there is no Eastern element in the Adephagan fauna such as that which is brought into the Lamellicorn-fauna by the presence of *Parastasia coquereli*, nor are there any South-Asiatic species corresponding to the two Cetoniines *Oxycetonia versicolor* and *Protætia aurichalcea*.

B. Aldabra Group. The subspecies *trilunaris* of *Cicindela melancholica* is, as stated above, a Madagascan and East African form. Of the 6 species of Carabidæ found in Aldabra, *Pheropsophus humeralis* and *Tetragonoderus bilunatus* (which also occurs in the Seychelles) are Madagascar species; *Tachys bibulus* is known from Madagascar and the Mascarene Islands; *Hypolithus pulchellus* occurs in Madagascar and in Africa, having been described from the far side of that continent (Senegal); *Hypolithus pavoninus* is an East African species, while *Dioryche interpunctata*, which occurs also in Coetivy Island, is widely distributed, being known from West Africa, Madagascar, the Mascarene Islands, and the Coromandel coast of India.

Of the 10 species of Dytiscidæ, 4 (*Laccophilus posticus*, *Laccophilus addendus*, *Hydrovatus humilis* and *Bidessus capitatus*) are Madagascar species; 2 (*Hyphydrus impressus* and *Copelatus pulchellus*) are Afro-Madagascan, occurring in Madagascar, the Mascarenes, and very widely separated parts of Africa; one species (*Canthydrus notula*) is Tropical African, not known from Madagascar; while 2 (*Eretes sticticus* and *Cybister tripunctatus*) are very widely spread, the former having a world-wide distribution.

The predominant Madagascan and African affinities of the Aldabra Adephagan fauna are therefore evident.

C. There remain 2 species, both Dytiscidæ, which were found neither in the Seychelles nor in the Aldabra Group. The former, *Bidessus thermalis* from the Chagos Islands, is a widely distributed species, represented by various forms in Southern Europe, North and West Africa, Egypt, Arabia, Persia, and Bengal. The other species, *Bidessus farquharensis* from Farquhar, is described as a new species.

* Also cf. the bottom of p. 218.

Condition of the wings in the Carabidæ.

It has been possible to investigate this to some extent in 8 out of the 13 species. One of the forms examined is the flightless *Anillus*: another is *Dioryche interpunctata*, in which a remarkable and apparently discontinuous variation has come to light, some of the specimens having the wings reduced (see p. 249): with these exceptions no trace of reduction or atrophy of wings has been discovered, and as far as can be seen the general condition of these organs is one of full development.

The condition of the wings in this family is particularly interesting, as in some insular faunas the Carabidæ are remarkable for having a large number of flightless species. This is especially the case in the Hawaiian Islands, for an account of the Carabid-fauna of which I must refer to Dr Sharp's very interesting introductory remarks on that family in Fauna Hawaiiensis, vol. iii., part iii. pp. 175—189. In almost every point, however, the Carabid-fauna of the Seychelles stands in most marked contrast to that of the Hawaiian Islands. In the latter, the endemic forests are tenanted by a large number (over 200 species) of Carabidæ, all of which, with the exception of one species, are confined to the Archipelago; this large number of species belongs to very few groups, presenting, to use Dr Sharp's phrase (*op. cit.* p. 177), the phenomenon of great "taxonomic concentration"; in their affinities they are almost all very isolated; while 90 per cent. of them are flightless (*op. cit.* p. 178), having the wings more or less reduced. In the Seychelles, on the other hand, the endemic forests are to all appearance devoid of Carabidæ, such species as do occur in the islands being found in the cultivated lower country: the Carabid-fauna is small and fragmentary, consisting of a number of genera belonging to different groups and represented each by either a single or at most by very few species: the species themselves are not isolated in their affinities, but are either more or less widely-spread outside the islands, or closely-allied to species found elsewhere: while, with the two exceptions mentioned above, they appear to have their wings fully-developed.

Some of the points of difference between the Seychelles and Hawaiian faunas mentioned above are probably not confined to the Carabidæ, but will be found to apply also to many other sections of the entomological fauna. But it should be added that in one respect the Seychelles Carabid-fauna is not characteristic of the Coleopterous fauna of those islands as a whole, and that is in its apparent lack of an endemic element. It can be said fairly safely that many parts of the Seychelles Coleopterous fauna do possess such an element, and in this respect the Seychelles Carabidæ are not a fair sample of the whole Coleopterous fauna to use for purposes of comparison with other insular faunas.

Cicindelidæ.

Cicindela Linnæus, Syst. Nat., ii. 1735, p. 657.

26. *Cicindela melancholica*, Fabricius.

Cicindela melancholica Fabricius, Suppl. Ent. Syst., 1798, p. 63; Alluaud, Liste Coléopt., p. 9.

I am indebted to Dr Walther Horn for assisting me in dealing with the varieties of this species and their nomenclature, and for sending me specimens of several forms for

comparison. The specimens obtained by the Percy Sladen Trust Expedition belong to two forms of the species.

A. subsp. *trilunaris*, Klug.

Cicindela trilunaris Klug, Ins. Madag., Abh. Ak. Wiss. Berlin, 1832, i. p. 120, Pl. 1, fig. 1.

Cicindela congrua Klug, Monatsb. Berlin Ak., 1853, p. 245.

Cicindela trilunaris var. *aldabrica* Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 571.

A series of over 40 ♂ and over 30 ♀, all except 1 from Aldabra. Length varies from 9½—12½ mm. There is much variation in the exact form of the white markings on the elytra; in only few specimens is the transverse line completely separated from the posterior discoidal spot; in many the end of the line and the anterior part of the spot are drawn out so that they almost meet; and in many specimens they are completely united. In the single specimen (♂) from Assumption, the line and spot are quite separate, as is also the case in 3 specimens which Dr Horn sent me for comparison, 2 from Madagascar and 1 from German East Africa.

Loc. Aldabra: Takamaka, XI.—XII. 1908; Mr Fryer informed me that this *Cicindela* swarmed at the end of November, and that specimens came to the lamp and caught other insects which had been attracted: it was previously obtained in Aldabra by Voeltzkow, etc. Assumption: 1 ♂, 1910 (Dupont). Madagascar, East Africa.

B. var. *seychellensis*, nov.

=*tenuilineata* Alluaud (*nec* W. Horn), Liste Coléopt., p. 9.

var. oculis valde prominentibus, prothorace brevi; colore et sculpturâ capitis prothoracisque subsp. *trilunari* affinis, sed prothorace distincte breviore distinguenda. Long. corp. 9½—12 mm.

9 ♂, 11 ♀. Dr Horn tells me that this does not correspond exactly with any described form of the species. Its eyes are more prominent than those of any other form. The sculpture of the head and prothorax is very similar to that of *trilunaris* Klug, and (as Dr Horn informs me) almost identical with that of var. *perplexa* Dejean: that is to say, it is considerably smoother than that of the true *C. melancholica*. The prothorax is distinctly shorter and proportionately broader than that of *trilunaris*. In the series before me, although the superficial resemblance between the two forms is considerable, this distinguishing character in the form of the prothorax is constant. According to Dr Horn, the var. *perplexa* sometimes has the prothorax of about the same shape as that of var. *seychellensis*. The colour of *seychellensis* is very similar to that of *trilunaris*; a coppery-brown, with metallic green on parts of the head and the margins of the prothorax and in the punctures of the elytra. There is some variation in the white markings on the elytra; in none of the specimens before me is the transverse line joined to the posterior discoidal spot. In addition to specimens from Seychelles, I refer to this variety one specimen from Farquhar Atoll, which is about 460 miles to the South and relatively near the range of subsp. *trilunaris*.

Alluaud, in his List of Madagascar Coleoptera (p. 9), records the form *tenuilineata* W. Horn as having been found by him in Praslin: but Dr Horn tells me that what was

really got in Praslin by Alluaud is the var. *seychellensis*, just described above. The real *tenuilineata* W. Horn is a synonym of var. *perplexa* Dejean.

Loc. Seychelles: Praslin; in hot sunshine on bare red subsoil, paths behind Grande Anse, etc., XI. 1908; 1905; previously obtained in Praslin by Alluaud: Mahé, 1909, 1 specimen. Farquhar Atoll: 1 ♀, 1905.

Carabidæ.

Ophionea Klug, 1821.

Bedel (Bull. Soc. ent. France, p. 72, 1910) states that *Casnonia* Latreille and Dejean (1822) is exactly synonymous with *Ophionea* Klug (1821); but that *Casnoidea* Castelnau (1835) can be provisionally retained as a distinct genus, though differing from *Ophionea* only in having the 4th joints of the tarsi bifid, while in *Ophionea* they are not bifid. *Casnonia* Latreille is given by Alluaud in his Liste des Coléoptères de la Région Malgache, p. 38, as synonymous with *Colliuris* Degeer (1774), but Bedel (*l.c.*) considers that *Ophionea* (= *Casnonia*) should be kept separate from *Colliuris*, at any rate for the present.

27. *Ophionea* sp.

A single specimen belonging to a species not represented in the collections of the British Museum or (as M. Lesne has informed me) of the Paris Museum. There are however many described species which I have been unable to see, and I have thought it best not to make this single specimen a new species. The following is a description:

Length $6\frac{1}{4}$ mm. Head and thorax strongly shining, dark blue; labrum and mandibles dark reddish-brown, palpi testaceous, antennæ with joints 1—3 and the base of joint 4 testaceous, the rest of joint 4 and joints 5—11 darker; legs testaceous; elytra pitchy-brownish, testaceous at the apex, shining, with a slight metallic bluish reflection in front. Head smooth and impunctate but with some very fine transverse striolæ, rhomboidal, the sides behind the eyes sloping in towards the neck, the hind angles rounded off; the neck is constricted but not prolonged or excessively narrow. Thorax slightly longer than broad, narrowed in front and with the anterior angles rounded off, somewhat narrowed also at the base, with sides rounded and slightly sinuate before the posterior angles, which are almost right angles; surface smooth and impunctate in front, with faint transverse striolæ and a distinct median longitudinal line, rather closely and subrugosely punctured at the base. Elytra at the base twice as wide as the base of the thorax, or more, each with 8 striæ bearing series of punctures becoming obsolete towards the apex, and with a very short series of punctures at the base between the suture and the first stria; interstices smooth and flat. The elytra are nearly parallel-sided and obliquely subtruncate behind: I can see no trace on them of seriate tactile hairs such as are mentioned by Bedel (*op. cit.* p. 71) as occurring in certain members of the genus.

Loc. Seychelles: Mahé, 1907 (Thomasset).

PHEROPSOPHUS Solier, Ann. Soc. ent. France, ser. 1, ii. 1833, p. 461.

28. *Pheropsophus humeralis* Chaudoir, var. ?

Pheropsophus humeralis Chaudoir, Bull. Mosc., iv. 1843, p. 710; Alluaud, Liste Coléopt., p. 51, and footnote 4.

Pheropsophus omostigma Chaudoir, Ann. Soc. ent. Belgique, xix. 1876, p. 39.

The collection contains a single specimen of a *Pheropsophus* from Aldabra. Monsieur Lesne, to whom it was sent for examination, informs me that it does not appear to him to differ from the species in the Paris Museum which bears the name of *P. humeralis* Chaudoir. On the other hand I have compared it with two specimens in the British Museum named *P. humeralis* Chaud., one of which, received from Oberthür, bears his label stating that it was compared with the Type of the species; and there are certain differences between the Aldabra specimen and these two specimens. The Aldabra specimen has the shoulders of the elytra slightly less prominent. It has the light-coloured humeral mark much reduced, forming only a fine fleck. Chaudoir, however, in discussing this species (Ann. Soc. ent. Belgique, xix. 1876, p. 39), remarks that the humeral mark is "quelquefois presque effacée." The Aldabra specimen is 18 mm. long: it is rather light in colour, decidedly lighter than the two specimens in the British Museum; the ground-colour of the elytra is brown, not black, which agrees with Chaudoir's statement in the article just cited, that the "couleur du fond n'est pas noire, mais toujours brune"; the legs (excepting the dark marks at the apices of the femora) and light parts of the head and underside are of a light yellowish-testaceous; the dark mark on the vertex is strongly emarginate in front, somewhat narrower behind, and reaches back to the anterior margin of the thorax. As there is only one specimen, and as the British Museum specimens are not enough to indicate the extent of individual variation in the form of the shoulders, etc., it is not easy to decide whether the Aldabra specimen should be considered as a distinct species or as a form of *P. humeralis*, but I have decided to retain it under that name. Wings can be seen under the elytra of the specimen.

Loc. Aldabra: Takamaka, 1907 (Thomasset). *P. humeralis* Chaud. is known from Madagascar.

TETRAGONODERUS Dejean, Spec. Col., iv. 1829, p. 485.

29. *Tetragonoderus bilunatus*, Klug.

Tetragonoderus bilunatus Klug, Ins. Madag., Abh. Ak. Wiss. Berlin, 1832, i. p. 135; Alluaud, Liste Coléopt., p. 42; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 572, and Mitt. Zool. Mus. Berlin, v. 1910, p. 17.

A series of about 41 ♂ and 32 ♀. I have mounted the elytra and wings of several specimens and find the wings well-developed: a large ♂ has the elytron $3\frac{3}{4}$ mm. long, wing $6\frac{1}{4}$ mm.; a small ♂ has the elytron 3 mm. long, wing $4\frac{3}{4}$ mm.; 3 ♀ have each the elytron 3 mm. long, wing 5 mm.

Loc. Seychelles. None of the specimens were found in the mountain-forests, but all in the low country or at the coast, frequently in bare and dry places where the subsoil is exposed: Mahé, Silhouette, Praslin, Bird Island: previously recorded from Mahé by Kolbe and Fairmaire. Coetivy, 1905. Farquhar Atoll, 1905. Amirantes, 1905: Eagle and Desroches Islands. Aldabra, 1895 (Voeltzkow). Madagascar.

PENTAGONICA Schmidt-Göbel, Faun. Col. Birmaniæ, 1846, p. 47.

30. *Pentagonica mahena*, Kolbe.

Pentagonica mahena Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 18.

No specimen of any species of this genus was obtained by the Percy Sladen Trust Expedition.

Loc. Seychelles: Mahé (Brauer).

CHLÆNIUS Bonelli, Obs. ent., i. 1809, tabl. synopt.

31. *Chlænius bisignatus*, Dejean.

Chlænius bisignatus Dejean, Spec. Col., ii. 1826, p. 303; Alluaud, Liste Coléopt., p. 31; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 17.

8 specimens, 4 of which have the yellow spot on the posterior part of the elytra, while in the other 4 it is completely absent. Kolbe (*l.c.*) remarks that Fairmaire had previously stated the species to be represented in the Seychelles by a form without the yellow spot, but that the specimens obtained by Brauer possessed it. Thus, in the series before me, the two forms are equally represented. I have examined the wings of two specimens (one belonging to the form with a spot on the elytron, and one to that in which it is absent), and find them 11 mm. long, while the elytron is about 7 mm. long.

Loc. Seychelles. Mahé; from the low cultivated country, various localities: previously obtained by Brauer, etc. Mascarene Islands, Comoro, Madagascar.

? HYPOLITHUS.

Hypolithus Dejean, Spec. Col., iv. 1829, p. 166.

Of the following 3 species, the first (*H. sechellarum* Kolbe) was described as a *Siopelus*, and the remaining two are sometimes referred to that genus. They do not, however, agree with the original description, nor with the type-species of *Siopelus*, in one particular, namely with regard to the presence or absence of a median tooth in the emargination of the mentum. *Siopelus* was described by Murray, Ann. Mag. Nat. Hist., ser. 3, 1859, vol. 3, pp. 27, 28. Murray gives as the first diagnostic character (on p. 27) "mentum profunde emarginatum, sine dente": and on p. 28, in the remarks following the diagnosis, he again mentions that the mentum has no median tooth. I have examined in the British Museum the original species, *S. calabaricus*, described by Murray (*op. cit.* p. 28), and also *S. venustulus*, in both of which the median tooth is quite absent. Bates also, in his description of *S. ferreus* from Ceylon (Ann. Mag. Nat. Hist., ser. 5, 1886, vol. xvii. p. 76), definitely states that the mentum of that species is destitute of a median tooth. On the other hand, a small but distinct median tooth is present in the specimens

which I have before me of *sechellarum* Kolbe and *pulchellus* Dejean. It may be that later work has shown that the presence or absence of this tooth is not a reliable generic character, or has in some other way modified the limits of the genus *Siopelus* : but though I have searched the works of several authors, I have not succeeded in finding statements of any such modification, and therefore I do not feel justified in going contrary to Murray's diagnosis of *Siopelus*. The following species are therefore placed under *Hypolithus*, with the reservation that this placing is intended to be only provisional.

32. *Hypolithus pavoninus*, Gerstaecker.

Hypolithus pavoninus Gerstaecker, Arch. Naturg., xxxiii. 1867, i. p. 23 ; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 572.

As stated below, I have seen no named specimen of *H. pavoninus*, and it is with some doubt that I refer to that species a single ♂ from Aldabra : its elytral sculpture is certainly not so fine as in the typical *H. sechellarum* and the elytra are a little longer.

Loc. Aldabra (Voeltzkow) ; ? 1 ♂, 1907 (Thomasset). German East Africa and Mozambique.

33. *Hypolithus sechellarum* (Kolbe).

Siopelus sechellarum Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 17.

I am much indebted to Professor Kolbe for kindly lending me a typical specimen of this species for purposes of comparison. Previously to seeing it I had identified my series as *H. pavoninus* Gerstaecker, of which I have seen no named specimen, and which seems to be very close to *sechellarum*. Professor Kolbe tells me that *sechellarum* is distinguished from *pavoninus* by the somewhat finer sculpture of its elytra, and by having the whole body, and particularly the elytra, shorter. By comparison with the typical specimen, the specimens from the Seychelles, the Amirantes, and Farquhar Atoll, are referred without doubt to *H. sechellarum* : but I am not quite so certain about the specimens from Coetivy, in one of which the elytral sculpture does appear slightly coarser than in the typical specimen.

I have examined the wings of 2 specimens, a ♀ from Mahé and a ♂ from Coetivy, and found them nearly twice as long as the elytra.

Loc. Seychelles : Mahé ; Mamelles, June—July (Brauer) ; 4 ♀, 1908—9. Amirantes: Eagle, 1 ♂, 1 ♀, 1905. Farquhar Atoll : 2 ♂, 4 ♀, 1905. Coetivy : 2 ♂, 2 ♀, 1905.

34. *Hypolithus pulchellus*, Dejean.

Hypolithus pulchellus Dejean, Spec. Col., iv. 1829, p. 181 ; Alluaud, Liste Coléopt., p. 34.

2 specimens ; I am indebted to Monsieur Lesne, to whom I sent one, for the identification. Judging from Dejean's description I think the dark bluish-green colour on the elytra must be extended and the light testaceous colour consequently reduced in these 2 specimens (as compared with those originally described), so that the sutural and lateral dark patches are united with one another.

Loc. Aldabra : 1907 (Thomasset). Cosmoledo : 1907 (Thomasset). Madagascar. Africa ; originally described from Senegal.

DIORYCHE MacLeay, Annul. jav., 1825, p. 21.

35. *Dioryche interpunctata* (Dejean).

Platymetopus interpunctatus Dejean, Spec. Col., iv. 1829, p. 71.

Dioryche interpunctata Alluaud, Liste Coléopt., p. 35; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 572.

8 ♂, 8 ♀. I have made an examination of the *wings* in 5 ♂ and 5 ♀, removing and mounting these organs. In the material thus examined there are two distinct forms, one in which the wings are considerably longer than the elytra, the other in which they are about the same length, or only very slightly longer than, the elytra. The smaller form of wing is also proportionately reduced in breadth: it appears to be in most respects a reproduction of the larger form on a smaller scale*. This dimorphism seems independent of sex or locality; large-winged and small-winged forms occur in both sexes; and in the case of Aldabra, both forms have been obtained in the same island. I can see no external difference in the specimens corresponding to the difference in the wings. In the large-winged forms (2 ♂ from Coetivy, 1 ♂ and 1 ♀ from Aldabra), the length of the elytra varies from $4\frac{1}{2}$—5 mm., that of the wings from $6\frac{1}{4}$—7 mm.: in the small-winged forms (2 ♂ and 1 ♀ from Cosmoledo, 3 ♂ from Aldabra) the measurements are, elytra $4\frac{1}{4}$—5 mm., wings $4\frac{3}{4}$—$5\frac{1}{2}$ mm.

Loc. Aldabra: 1908—9, 3 specimens (Fryer); 1907, 8 specimens (Thomasset); previously obtained by Voeltzkow in 1895. Cosmoledo: 1907, 3 specimens (Thomasset). Coetivy: 1905, 2 specimens. Madagascar, Mascarene Islands, Africa (Senegal, according to Alluaud's "Liste"), India (Coromandel).

STENOLOPHUS Dejean, Spec. Col., iv. 1829, p. 405.

36. *Stenolophus fulvipes*, Erichson.

Stenolophus fulvipes Erichson, Arch. Naturg., ix. 1843, i. p. 216; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 18.

Anisodactylus basicollis Fairmaire, Ann. Soc. ent. France, 1892, Bulletin, p. cli; Alluaud, Liste Coléopt., p. 35; Kolbe, *op. cit.* p. 17.

7 specimens, agreeing so closely with Fairmaire's description of *A. basicollis* that I have very little doubt they are the same, though I have seen no named specimen of that species. As, however, the nature of the mouth-parts made it clear that the species is not an *Anisodactylus*, I sent specimens to Professor Kolbe; he has compared them with the type of *S. fulvipes* Erichson, and has informed me that they belong to that species. The name *Anisodactylus basicollis* must therefore become a synonym of *Stenolophus fulvipes*. I have examined the wings of the two specimens from Mahé, and find them to be about 8 mm., while the elytra are about 4 mm., long.

* It appears that the nervuration of the small form of wing is complete, and that all parts are present though reduced in size. In many flightless Hawaiian Carabidæ, on the contrary, the nervuration is very much reduced and the apical portion of the wing is absent; see Sharp, Fauna Hawaiiensis, vol. iii. pt. III., p. 179 sqq.

Loc. Seychelles: Mahé, 1908—9, 1 specimen from the low country and a second without record of exact locality; previously found by Brauer and Alluaud. Amirantes: Eagle Island, 1905. Comoros, Africa (Mozambique and Angola).

Monsieur Lesne has kindly sent me from the Paris Museum an unnamed specimen labelled "Madagascar, Dr Daullé, 1857"; it is slightly smaller than the other specimens before me, its labrum is lighter (more reddish) in colour, and more transverse in form: in other respects the specimen so closely resembles the series discussed above that I think it must be referred to the same species, *S. fulvipes*.

Tachys Schaum, Naturg. Ins. Deutschlands, i. 1860, p. 743.

37. *Tachys bibulus* (Coquerel).

Bembidium (*Tachys*) *bibulum* Coquerel, Ann. Soc. ent. France, ser. 4, vi. 1866, p. 313.

Tachys bibulus Alluaud, Liste Coléopt., p. 16.

4 specimens, agreeing closely with Coquerel's description except in one point concerning the colour. Coquerel in his diagnosis uses the expression "viridi-æneum, nitidum," and in the description "d'un vert bronzé très brillant." The specimens before me are shining and pitchy-blackish, not bronze-green; but in certain lights they have a slight bronze reflection. In all other respects, in size, form of thorax and elytral striæ, colour and form of light markings on the elytra, etc., they correspond closely with Coquerel's description of *T. bibulus*, to which species I therefore refer them.

Loc. Aldabra; 1908—9, 3 specimens (Fryer). Seychelles; Mahé, marshes on coastal plain at Anse aux Pins, I. 1909, 1 specimen. Réunion, Mauritius, Madagascar.

38. *Tachys seychellarum*, sp. nov. (Pl. **12**, fig. 13).

Sat latus, ovalis, lævis, testaceus, capite elytrisque parum infuscatis, antennis palpisque pedibusque pallidis; prothorace fortiter transverso, elytris conspicue angustiore, postice angustato, angulis posticis fere rectis, lateribus antice angulisque anticis rotundatis; elytris unistriatis, striâ (suturali) ad basin attingente, disco bipunctato, puncto posteriore setigero. Long. corp. $1\frac{1}{4}$ mm.

Form rather broadly oval, smooth, impunctate, testaceous, with head and elytra rather darker, and with antennæ and legs pale. Joints of antennæ short. Head with 2 setigerous punctures on either side just within the eye. Thorax narrower than elytra in its broadest part, and conspicuously so at the base: about $1\frac{1}{2}$ times as broad as long, narrowed behind with sharp posterior angles, with the sides rounded in front and the anterior angles rounded off, with a setigerous puncture on either side-margin a little before the middle and another at each posterior angle. Elytra rather broad, each with only one stria (the sutural), which reaches to the base; disc with 2 punctures (about the region of the 3rd stria, were other striæ present), one rather before the middle of the length, the other about $\frac{1}{4}$ of the length from the posterior end, the posterior one bearing a seta, the anterior one having no seta (though it is possible this is broken off); a marginal puncture at the shoulder and 2 others on the side-margin just behind the shoulder; apex of elytron subtruncate, with a small seta near its outer margin. Wings present. Underside

impunctate, with a few minute hairs on the ventral segments, the terminal segment bearing short minute hairs and 4 longer ones standing in a curved transverse line.

This species belongs to the group of very small light-coloured *Tachys* having only 1 stria on each elytron. I have compared it with several specimens of the S. African species of this group: it is somewhat of the form of *T. humeralis* Pér. and *T. debilis* Pér., *i.e.* somewhat broadly oval as compared with other narrower and more elongate species. But *T. seychellarum* is smaller, and is characterised by having its thorax much narrower at the base than the elytra, whereas in *T. humilis* and *T. debilis* it is not much narrower.

Loc. Seychelles. Mahé: Cascade Estate, between about 800 and 1500 ft., 1909; 1 specimen.

Anillus, Jacquelin-Duval.

Anillus Jacquelin-Duval, Ann. Soc. ent. France, 1851, Bulletin, pp. lxxii and lxxiii; Ann. Soc. ent. France, ser. 2, x. 1852, p. 220; the figures are given in vol. ix. (1851) of the Annales, pl. 13, figs. 25—31.

A single specimen of a very minute, completely blind, and wingless Carabid was found in Félicité Island. Unfortunately it got badly damaged, so that it is impossible to determine the species. I have mounted the specimen in balsam, and an examination of it thus mounted, even in its fragmentary condition, has left very little doubt that it is a species of *Anillus*.

It agrees with the original description and figures (referred to above) of the genus *Anillus* in the following characters:—in general form; in the complete absence of eyes and wings; in the moniliform character of the antennæ; in the possession of a small median tooth by the mentum; in the form of the maxillary and labial palpi, in each of which the penultimate joint is large and swollen while the terminal joint is fine and subulate, and in the case of the maxillary palpi short and very minute; in the shape of the prothorax; and in the form of the elytra, which are elongate and subparallel, completely covering the abdomen (and, as far as can be seen, soldered along the suture and not separately rounded at the apex). It must be mentioned, however, that:—(i) I have been unable to examine the structure of tibiæ and tarsi, owing to the loss of these organs; (ii) the nature of the balsam-mount has not allowed of the form of the mandibles being closely examined; (iii) the labrum appears to have its front margin only very shallowly emarginate (in this respect seeming to be nearer to the closely-allied genus *Illaphanus*), whereas the species of *Anillus* (*A. cæcus*) on which the genus was founded is figured by Jacquelin-Duval (*l.c.*) as having the front margin of the labrum more deeply emarginate. But despite the defects in my comparison, and the difference in form of the labrum, the balance of evidence is strongly in favour of referring the specimen to *Anillus*, and I have little hesitation in doing so.

At first I thought that this specimen was a *Scotodipnus*: but it cannot belong to that genus, as the elytra completely cover the abdomen, whereas in *Scotodipnus* they leave the extremity of the abdomen uncovered, and Schaum (Naturg. Ins. Deutschlands, i. 1860, p. 667) gives this as one of the principal characters on which he separated *Scotodipnus* from *Anillus*.

The occurrence of this blind and wingless genus in the Seychelles is very interesting. It was originally described from France; several European species have been described, and 1 from California: the allied *Illaphanus* was described from Australia. The following is a description of the specific characters of the Seychelles specimen as far as they can be made out.

39. *Anillus* sp.?

Length, just under 1 mm. Form narrow and elongate. Colour pale yellowish-testaceous. Antennæ with joints 1 and 2 large and subturbinate, joint 3 small and subturbinate, joints 4—10 almost spherical, becoming gradually larger towards the apex of the antenna, joint 11 subconical. Prothorax a little broader than long, narrowed behind and subcordate, the anterior angles somewhat rounded, the posterior angles nearly right angles: each posterior angle is seen under a high power to be slightly but quite distinctly emarginate at the actual corner: disc of the thorax appearing smooth and impunctate, but with very high magnification a few extremely minute punctures bearing very short setæ can be seen. Elytra slightly broader than broadest part of prothorax, with sides subparallel, narrowing slightly behind: lateral margins under compound microscope seen to be serrate, more markedly near the shoulders: surface smooth: near the lateral margins are some large circular punctures, from the centre of each of which arises a very long and very fine outstanding seta: there are 3 such in the humeral region and several in the posterior part of the elytron; the longest and most conspicuous setæ on each elytron are (1) the middle of the 3 humeral, (ii) one arising about $\frac{1}{3}$ the length of the elytron from its apex, and (iii) one arising at the posterior extremity of the elytron, some distance from the suture.

Loc. Seychelles. Félicité: from forest, 14—17. XII. 1908.

Note. *Carabid. gen. et sp. indet.*

A single damaged specimen: the absence of the head renders it impossible to fix the genus with certainty, but the remainder of the insect is intact and has the appearance of being possibly a *Stenolophus*. Length (without the head) $3\frac{1}{2}$ mm. Thorax brownish-testaceous, considerably broader than long, slightly narrowed towards the base, with the posterior angles obtuse and rounded; surface impunctate in front, impressed on either side and finely punctured at the base. Elytra at the base a little broader than the base of the thorax, each with 8 striæ continued to the apex and with a very short stria at the base between the 1st and 2nd discal striæ, and with smooth interstices: pitchy or blackish with the 1st interstice testaceous throughout, with a testaceous vitta extending along the 6th interstice, broadening out at the shoulder and behind the middle, and with the lateral margin narrowly testaceous.

Loc. Aldabra (Fryer).

Dytiscidæ.

Canthydrus Sharp, On Dytiscidæ, p. 269.

40. *Canthydrus notula* (Erichson).

Hydrocanthus notula Erichson, Arch. Naturg., ix. 1843, i. p. 220.

Canthydrus notula Sharp, On Dytiscidæ, p. 275; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 574.

Canthydrus biguttatus Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 123, and Bull. Soc. ent. France, 1900, p. 49; Alluaud, Liste Coléopt., p. 62.

Loc. Aldabra: Takamaka, several hundred specimens, 1908 (Fryer); 1895 (Voeltzkow). Widely distributed in Tropical Africa.

Laccophilus Leach, Zool. Miscell., iii. 1817, p. 69.

41. *Laccophilus posticus*, Aubé.

Laccophilus posticus Aubé, Spec. Hydrocanthaires, 1838, p. 428; Sharp, On Dytiscidæ, p. 309; Alluaud, Liste Coléopt., p. 64; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 573.

A large series, about 66 specimens. In many specimens the undulating dark lines on the elytra are interrupted at about $\frac{1}{3}$ of the length from the apex, so that a transverse pale mark, not reaching quite to the suture, is formed: there is considerable variation in the development of this, in some specimens it is scarcely perceptible while in others it is fairly conspicuous. Two ♂ in Dr Sharp's collection (Brit. Mus.) have this pale band very little marked. In the ♂ the abdomen is pitchy-black ventrally except at the base and apex, where it is reddish brown: the 6th segment has its posterior margin sinuate on either side, and is produced in the middle. In the ♀ the abdomen is much lighter in colour ventrally, being reddish-brown throughout, only slightly darker in the middle: the 6th segment is a little less sharply produced in the middle, its posterior margin is slightly sinuate on either side, and there is also sometimes a very small and slight sinuation in the middle.

Loc. Aldabra: "Wilson's Well," Takamaka, x. 1908 (Fryer): 1895 (Voeltzkow). Madagascar and Mauritius.

42. *Laccophilus addendus*, Sharp.

Laccophilus addendus Sharp, On Dytiscidæ, p. 316; Alluaud, Liste Coléopt., p. 63; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 573.

Not obtained by the Percy Sladen Trust Expeditions.

Loc. Aldabra: 1895 (Voeltzkow). Madagascar.

Hydrovatus Motschulsky, Etud. ent., 1885, p. 82.

43. *Hydrovatus humilis*, Sharp.

Hydrovatus humilis Sharp, On Dytiscidæ, p. 327; Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 107; Alluaud, Liste Coléopt., p. 60.

A single specimen, which agrees with Dr Sharp's type of *H. humilis*: it is darker in colour, the elytra being so dark throughout that the suture does not appear any darker than the rest of the surface. Régimbart (*l.c.*) considers *H. humilis* to be a variety of *H. sordidus* Sharp, which is known from Egypt, Arabia &c.

Loc. Aldabra: "Wilson's Well," Takamaka, x. 1908 (Fryer). Madagascar.

Bidessus Sharp, On Dytiscidæ, p. 344.

I. Species with a distinct sutural stria.

44. *Bidessus thermalis* (Germar).

Hydroporus thermalis Germar, Faun. Ins. Eur., 20. 3.

Bidessus thermalis Sharp, On Dytiscidæ, p. 353; Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 85.

11 specimens, varying in length between 1·5 and 1·9 mm. They are of a rather small form, apparently approaching somewhat to the var. *signatellus* Klug. There is some variation in colour; the dark marks at the base of the pronotum and elytra are almost absent in some specimens; the inner dark band on the disc of the elytron is always characteristically dilated outwards in the form of a hook at its posterior extremity and in its anterior part is sometimes confluent with the shorter outer band, sometimes distinctly separated from it. Ventrally the sterna and posterior coxæ are ferruginous, while the abdomen excepting at its extreme base and apex is much darker.

Loc. Chagos Islands: Diego Garcia, 1905: 8 of the specimens are labelled by T. B. Fletcher "9. VII. 05. In stagnant pool in Barachois." The species is known in various forms from S. Europe, N. and W. Africa, Egypt, Arabia, Persia, and Bengal.

45. *Bidessus capitatus*, Régimbart.

Bidessus capitatus Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 83; Alluaud, Liste Coléopt., p. 59. (Pl. **12**, fig. 14.)

Var.? 57 specimens from Aldabra. Length from just under 2 to $2\frac{1}{5}$ mm. Head and prothorax reddish-fulvous, the former infuscate behind and along the inner margins of the eyes, the latter very narrowly darker along its front margin, broadly darkened behind between the plicæ. Head with a slight transverse elevation at the base of the clypeus, finely punctured: pronotum with fine and rather numerous punctures, stronger towards the base: plicæ oblique continued on to the elytra as slightly longer grooves. Elytra rather densely and rather strongly punctured, with fine pubescence; fuscous, with the following pale (yellowish-testaceous) markings: the lateral margin, which is sometimes divided behind the middle by an elongated dark mark and triangularly dilated at the apex; two longitudinal vittæ on the front part of the disc, neither of them reaching the base, the inner usually shorter and ending posteriorly before the middle of the elytron, the outer longer and ending behind the middle of the elytron: these longitudinal pale vittæ are connected in front with one another and with the lateral margin by a transverse pale vitta running obliquely from the shoulder to near the sutural stria. The sutural area, between the sutural stria and the suture, is dark throughout its length: it, and

more especially the basal area, appear as the darkest parts. The light and dark areas are not nearly as strongly contrasted as in some species, as most of the fuscous parts of the disc are not very dark. There is some variation, but the most usual arrangement is shown in Pl. **12**, fig. 14. Ventrally the insect is black.

The specimens from which the above description is taken differ so little from Régimbart's description of *B. capitatus*, that I have very little doubt that they are a form of that species, though I have seen no named specimens of it. The chief difference appears to be in size: Régimbart gives the length as $1\frac{3}{4}$—$1\frac{4}{5}$ mm. (slightly smaller than *B. geminodes* Rég., *op. cit.* p. 88), whereas the specimens before me vary between just under 2 and $2\frac{1}{5}$ mm. (as large as, or slightly larger than, *B. geminodes*). Régimbart uses the words "pedibus antennisque flavis," while in these specimens the feet and antennæ are more reddish, or *fulvous*. He compares *B. capitatus* closely with *B. geminodes*: I have seen a specimen of *B. geminodes* (var. *zanzibarensis*) named by him, and examined it side by side with specimens from the series under consideration, when some of the differences mentioned by him as existing between the two species are apparent. In *B. geminodes* there is no transverse ridge right across the head at the base of the clypeus: the two longitudinal pale vittæ on the front part of each elytron are entirely separated from one another and from the lateral margin, whereas in *B. capitatus* they are united in front to it and to one another by the oblique transverse vitta described above. There are variations in arrangement of light and dark markings, but this last character is maintained throughout, and it is this oblique vitta which gives to *B. capitatus* its characteristic elytral pattern as contrasted with that of *B. geminodes* etc.

Loc. Aldabra: Takamaka, X. 1908 (Fryer). Madagascar, near Diego Suarez (Alluaud).

46. *Bidessus farquharensis*, sp. nov. (Pl. **12**, fig. 15).

Ovalis, sat convexus, elytrorum lateribus regulariter curvatis, nitidus, pedibus antennisque flavis, his apice parum infuscatis; capite flavescente, postice et ad oculos infuscato, tenuissime punctulato, utrinque ad basin clypei parum impresso; pronoto flavo, antice sat anguste, ad basin inter plicas late nigricante, in medio sparse, antice posticeque crebrius punctato, punctis ad basin fortioribus, plicis obliquis in elytris breviter angulariter continuatis; elytris sat fortiter haud dense punctatis, tenuissime pubescentibus, striâ suturali profundâ ad basin fere attingente, nigricantibus, margine laterali flavo antice late, pone medium parum, apice triangulariter dilatato, vittisque 2 longitudinalibus flavis basin haud attingentibus et paulo ante medium abbreviatis: subtus sternis coxisque posterioribus obscure rufescentibus, abdomine nigricante. Long. corp. circa 2 mm.

Characterised by the rather convex oval form, the sides not being parallel but curved: the thoraco-elytral angle is distinct but slight, the elytra are ampliated in their middle part and their sides are gradually curved from base to apex. Also characterised by the rather shining surface, the rather wide spacing-out of the elytral punctuation, and the strong contrast of the light and dark markings, the former being yellow and the latter almost black. There is no transverse ridge across the head at the base of the clypeus, but only a slight depression on either side. The thoracic plicæ are curved

slightly inwards, and are continued on to the elytra as grooves of about the same length as the thoracic portion. Sutural stria deep, reaching the apex, but not quite to the base. Surface finely reticulate. Each elytron (Pl. **12**, fig. 15) is almost black with the following yellow markings: (i) the lateral margin, broadly dilated in its front part, slightly dilated behind the middle (this second dilation being sometimes rather vaguely cut off from the rest of the margin by a dark line), and triangularly dilated at the apex: and (ii) two longitudinal vittæ on the front part of the disc, not reaching the base and ending a little in front of the middle, quite separated from the lateral margin by an intervening dark area, but in one specimen confluent with each other at one point.

This species could not be identified with any in the British Museum collections, nor does it appear to agree entirely with any of Régimbart's descriptions. The colour-pattern of the elytra is of a similar type to that found in several other species, though the colours themselves may be different. This pattern is of the same type as that of *B. geminodes* Rég., though that species is extremely different in form, colour, and punctuation: judging from the description it is also similar to that of the W. African *B. africanus* Rég. (Mém. Soc. ent. Belgique, iv. 1895, p. 90), but here again the colour itself of the elytra is described as "d'un brun nébuleux," the species is smaller, and there are probably many other differences. In another case the figure and description (in Ann. Soc. ent. France, lxviii. 1899, p. 224) of a species from the Philippines, *B. pseudogeminus* Rég., show that the pattern is the same; here too, according to the description, the colours themselves appear to be fairly similar to those of *B. farquharensis*, but the form of the insect is described as "oblongue, subparallèle." All things considered I have felt it necessary to name and describe this species, while recognising that, were it possible to see specimens of all described species, it might prove to be a form of some one of them.

Loc. Farquhar Atoll: 5 specimens, 1905.

II. Species with no sutural stria.

47. *Bidessus peringueyi*, Régimbart.

Bidessus peringueyi Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 84: Ann. Soc. ent. France, lxxv. 1906, p. 244.

Bidessus sechellensis Régimbart, Bull. Soc. ent. France, 1897, p. 208; Alluaud, Liste Coléopt., p. 60.

B. sechellensis was described as a distinct species, but Régimbart afterwards (1906) found it to be the same as *B. peringueyi*. I have examined specimens of *B. peringueyi* named by Régimbart in the British Museum: it is a very small species belonging to the group with no sutural stria, and was not obtained by the Percy Sladen Trust Expeditions.

Loc. Seychelles: La Digue, 1892 (Alluaud). Madagascar, E. and S. Africa.

48. *Bidessus sp.*

A single specimen of a very small species. It is quite distinct from *B. peringueyi* Régimbart, being strongly punctured on the elytra. It does not appear to agree with any species in Dr Sharp's collection or elsewhere in the British Museum, but I am

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uncertain whether it may not be referable to some species which I have not seen, and have therefore thought it best not to describe it as new.

The length is about 1·5 mm. Form somewhat narrow and elongate-oval, thoraco-elytral angle slight. Shining; head, prothorax, antennæ and legs reddish-testaceous; elytra brown, without distinct markings and almost concolorous, slightly darker at the base and along the suture, and paler at the shoulders. Head finely punctulate with a slight elevation on either side at the base of the clypeus; pronotum finely and not closely punctured, the punctures stronger at the base, the plica on either side well-marked and angular, continued on to the elytron as a groove of about the same length; elytra fairly strongly and closely punctured, with excessively short and scanty pubescence (scarcely visible except with a compound microscope); sutural stria absent, replaced by a line of punctures. Beneath, ferruginous with posterior coxæ and base of abdomen infuscate: posterior coxæ strongly but not very closely punctured.

Loc. Aldabra: "Wilson's Well," Takamaka, X. 1908 (Fryer).

HYPHYDRUS Illiger, Mag., i. 1802, p. 299.

49. *Hyphydrus impressus*, Klug.

Hyphydrus impressus Klug, Ins. Madag., Abh. Ak. Wiss. Berlin, 1832, i., p. 136; Sharp, On Dytiscidæ, p. 380; Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 57; Alluaud, Liste Coléopt., p. 58; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 574.

6 specimens. There is a great development of the light markings on the elytra: this species is very variable in that respect, a specimen from Madagascar in Dr Sharp's collection having the middle and posterior parts of the elytra almost entirely dark. Régimbart (*l.c.*) mentions that certain specimens from Boma (Congo) were very dark, some even having the elytra "entièrement noirs, sauf une étroite bordure humérale."

Loc. Aldabra: "Wilson's Well," Takamaka, X. 1908 (Fryer); 1895 (Voeltzkow). Madagascar, Mascarene Islands, W. and S. Africa.

COPELATUS Erichson, Gen. Dytisc., 1832, p. 38.

50. *Copelatus gardineri*, sp. nov.

♂♀. Elongato-ovalis, angustus, nigro-piceus, capite prothoracisque marginibus lateralibus rufescentibus, elytris vittâ basali transversâ angustâ ad suturam vix interruptâ humerosque fere attingente, et maculâ subapicali, testaceis; corpore subtus rufo-piceo, antennis pedibusque testaceis plus minusve infuscatis; capite prothoraceque pertenuissime punctulatis, hoc utrinque ad basin plus minusve obsolete striolato; elytris pertenuissime haud dense punctulatis, striis nullis, seriebus punctorum duabus distinctis, et duabus aliis minus distinctis, postice serie submarginali punctorum tenuiter pubescentium. Long. corp. $4\frac{3}{4}$—$5\frac{1}{2}$ mm.

♂ tibiis anticis ad basin curvatis intusque emarginatis, tarsorum anticorum mediorumque articulis 1—3 dilatatis et articulis ultimis parum elongatis.

Elongate, narrow, moderately convex, extremely finely reticulate and extremely finely but not closely punctulate; pitchy-black, with head and sides of thorax reddish, with

a narrow yellowish-testaceous vitta across the base of the elytra, including the scutellum and scarcely interrupted at the suture, narrowing at its outward extremities and not reaching quite to the shoulders, and with a subapical testaceous mark on each elytron; body beneath dark reddish-pitchy, antennæ and legs testaceous, the posterior legs darker. Head with two punctate impressions on either side near the eye. Thorax with a group of fine punctures or punctiform striolæ on either side near the base, this sculpture varying but never very strongly developed: the thorax is also slightly impressed on either side in the region of this sculpture. Elytra with no striæ, but with 2 distinct though interrupted series of punctures, consisting of little lines of fine punctures with gaps between them: between these two series and between the outer one and the side-margin respectively, are two other much less distinct series, more interrupted and often hard to see, the inner one consisting often of isolated punctures separated by rather long intervals. In the posterior part of the elytron there is a submarginal series of punctures bearing fine pale hairs; in some specimens the punctures of the discal series also bear some similar hairs, as also do the punctures of the transverse row which (as in various other species of the genus) runs across the prothorax just behind its front margin: but in most specimens these hairs are absent, being probably worn away. The posterior coxæ and anterior abdominal segments are striolate laterally. In the ♂ the terminal joints of front and middle tarsi are slightly longer than in the ♀: other ♂ characters are given in the diagnosis.

This species belongs to Group I. of the genus, having no striæ on the elytra. Judging from the descriptions it seems to be allied to the Madagascar species *C. regimbarti* and *C. apicalis*, Fairmaire (Ann. Soc. ent. Belgique, xlii. 1898, p. 464), but is evidently distinct: *C. regimbarti* has a transverse basal vitta and a subapical mark on each elytron, but is much larger and is described as "fuscus" instead of black: *C. apicalis* is about the same length as *C. gardineri*, but has only a minute humeral mark instead of a transverse basal vitta, and differs too in other respects. Having seen no specimens I cannot be sure whether either of these species is really close to *C. gardineri* or not. *C. gardineri* is not very close to any species which I have seen in Dr Sharp's or other collections in the British Museum.

35 specimens. It is the only water-beetle which I ever found in any numbers in the mountain-streams of Seychelles. As far as my experience goes it is found not so much in the swiftly-running parts of the streams (which have prawns and crabs in them), as in more stagnant parts where the streams spread out on more level ground, such as the Silhouette Mare aux Cochons, into pools and small swamps. It was found in such places at elevations up to 1000 feet or over. I have dedicated it to Professor J. Stanley Gardiner, by whom it was first found in 1905.

Loc. Seychelles. Praslin: 1905, 5 specimens. Silhouette: Mare aux Cochons plateau, VIII—IX. 1908, 16 specimens. Mahé: from a swampy hollow near Morne Blanc, X. 1908, 14 specimens.

51. *Copelatus pandanorum*, sp. nov. (Pl. **12**, fig. 16).

♂♀. Oblongo-ovalis, depressus, ferrugineus vel interdum piceus: capite pronotoque persubtilissime punctulatis, hoc utrinque ad basin plus minusve striolato: elytris

subtilissime crebreque, ad apicem parum fortius, punctulatis, striâ submarginali antice valde abbreviatâ, disco striis tribus integris et duabus incompletis; 2 et 4 et 5 basin attingentibus fereque ad apicem continuatis; 1 et 3 solum ad apicem indicatis, in parte anteriore tote deletis, variabilibus, sæpius interruptis, interdum fere obsoletis. Long. corp. circa 5 mm.

♂ tibiis anterioribus ad apicem dilatatis, ad basin curvatis intusque emarginatis, tarsorum anteriorum et mediorum articulis 1—3 dilatatis.

Oblong-oval and depressed: unicolorous, ferruginous, or sometimes much darker, in which case the head and thorax are pitchy-ferruginous and the elytra pitchy. Surface very finely and minutely reticulate. Head extremely finely punctured, on either side towards the eye often more or less impressed and with 2 or 3 small groups of stronger punctures. Thorax with some punctiform striolæ on either side near the base; this sculpture varies greatly, being sometimes very little developed, in other cases covering an area reaching almost to the front margin, the variation apparently independent of sex (the sculpture being well-developed in some males): the thorax has also sometimes a slight impression near the base on either side of the middle. Elytra with numerous very fine punctures, more marked towards the apex: submarginal stria ending behind some distance before the apex, and abbreviated in front at about $\frac{1}{3}$ the length of the elytron from the base: disc with 5 striæ, but frequently appearing only 3-striate owing to the great reduction of nos. 1 and 3; these are present only in the posterior part of the elytron, varying in length, the front end of no. 1 being usually some distance behind the middle of the elytron while that of no. 3 is nearer the middle; they end behind a little before the apex, and are frequently interrupted in a number of places so that they often consist of a number of separate short lines, and in some cases one of them (especially no. 1) may be almost entirely absent: nos. 2, 4 and 5 are very distinct, starting from the base of the elytron and being continued throughout its length, nos. 2 and 4 being abbreviated a very little before, and no. 5 some way before, the apex; no. 5 curves slightly towards the lateral margin just behind the base. Wings examined in 1 male and 1 female, found to be $5\frac{1}{2}$ mm. long, while the length of the elytron is $3\frac{3}{4}$ mm. Underside ferruginous, the posterior coxæ and first four abdominal segments bearing striolæ at the sides, those on the coxæ being longitudinal in direction and those on the segments curving inwards towards the middle line. Male characters of the tarsi etc. are given in the diagnosis.

The habitat of this species is very remarkable. The series before me consists of 17 males and 20 females, all of which, without exception, were found living in the water that collects between the bases of the leaves of certain precinctive species of screw-pine* (*Pandanus*), many feet above the ground. They were found only in the endemic high damp mountain-forests, in situations where the water between the leaves would never under ordinary circumstances dry up. In one case two larvæ, having a quite characteristic Dytiscid facies, were also found between the leaves, showing that in all probability the whole life-cycle takes place in this curious habitat. There was also very frequently found with the Dytiscids another kind of larva, sometimes as much as 20 mm. long, elongated and somewhat depressed, with a smooth dark hard integument, with the body

* In all cases where there is an exact record of the species of *Pandanus*, it is *P. Hornei*: but I cannot be certain that a few of the specimens are not from *P. sechellarum*.

ending in a sharp acuminate process, and with apparently biforian spiracles. This larva has somewhat the facies of an Elaterid larva; but it is quite uncertain to what beetle it belongs, or why it should be continually found accompanying the *Copelatus* between the *Pandanus* leaf-bases. I have thought it best to mention it here, while hoping that a full description of it and of the *Copelatus*-larva may be given in a later part of this work. With regard to the curious habitat of *Copelatus pandanorum*, it is interesting to compare the cases of *Oxyomus palmarum* and *Atœnius lodoiceæ* (*supra*, pp. 225, 226), and the summary of facts concerning creatures found between bases of leaves of palms and *Pandani* in my introductory paper (Trans. Linn. Soc. London, ser. 2 (Zool.), Vol. xiv. 1910, pp. 24—5). The species was first found in 1905 by Professor Gardiner, and the rest of the material was obtained by myself in 1908: details are given below.

Loc. Seychelles. Silhouette: from leaf-bases of two growing trees of *Pandanus Hornei* in forest above Mare aux Cochons, 22. IX. 1908, 8 ♂, 13 ♀, and two larvæ (No. 35 *a*). Mahé: from leaf-bases of growing *Pandanus*, near Morne Blanc, X—XI. 1908, 3 ♂ and 3 ♀, all very darkly-coloured except one (No. 91); also 2 ♂ and 1 ♀ collected in 1905 (Gardiner). Praslin: from leaf-bases of *Pandanus Hornei* in jungle on Côtes d'Or Estate, 30. XI. 1908, 4 ♂, 3 ♀ (No. 342).

52. *Copelatus pulchellus* (Klug).

Agabus pulchellus Klug, Symb. phys., iv. 1834, pl. xxxiii., fig. 7.

Copelatus pulchellus Sharp, On Dytiscidæ, p. 583; Alluaud, Liste Coléopt., p. 66; Régimbart, Bull. Soc. ent. France, 1900, p. 50; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 574.

Régimbart has described (*l.c.*) the Aldabra form of this insect, and the 4 males and 4 females before me correspond with his description. It is a small form—the specimens in question being about 5 mm. long—and the female has the thorax and elytra almost entirely covered with a dense sculpture of deep striolæ which on the elytra undulate and anastomose. The species is very variable in this respect, some females being entirely destitute of striolæ, and some having only the lateral part of each elytron striolate (see Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 164).

Loc. Aldabra: Takamaka, some at light, X—XII. 1908 (Fryer): 1895 (Voeltzkow). Madagascar; E., W., and S. Africa.

HYDATICUS Leach, Zool. Miscell., iii. 1817, p. 69.

53. *Hydaticus leander* (Rossi).

Dytiscus leander Rossi, Faun. Etrusc., i. 1790, p. 202.

Hydaticus leander Sharp, On Dytiscidæ, p. 662; Alluaud, Liste Coléopt., p. 68; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 19.

3 ♂ from Coetivy. In 2 the thorax is reddish-brown, narrowly darker along the posterior margin: in the third it is much darker, all the middle portion being dark, and the head also is much darker than in the two other specimens.

Loc. Coetivy, 1905. Seychelles; La Digue, 1892 (Alluaud). Distribution very wide; S. Europe, Syria, Africa and Cape Verde Islands, Madagascar.

ERETES Castelnau, Ann. Soc. ent. France, i. 1832, p. 397.

54. *Eretes sticticus* (Linnæus).

Eretes sticticus (Linn.); Sharp, On Dytiscidæ, p. 699; Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 208; Linell, Proc. U. S. Mus., xix. 1897, p. 698; Alluaud, Liste Coléopt., p. 70; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 573.

1 male and 3 females: they have a rectangular dark patch, emarginate in front, on the vertex; the transverse dark thoracic band is short and not divided in the middle; the general colouring of the elytra is dark, and the postmedian dark band is not strongly marked; the elytral fossa of the ♀ is rather long. They appear therefore to approach near to the var. *helvolus* Klug. The length is about 13—15 mm.

Loc. Aldabra: 1908—9 (Fryer); 1895 (Voeltzkow), 1893 (Abbott). Cosmopolitan.

CYBISTER Curtis, Brit. Ent., iv. No. 151, 1827.

55. *Cybister tripunctatus* (Olivier).

Dytiscus tripunctatus Olivier, Ent., iii. 40. 1795, p. 14, pl. 3, fig. 24.

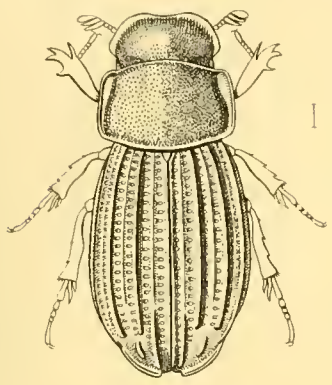
Cybister tripunctatus Sharp, On Dytiscidæ, p. 727; Linell, Proc. U. S. Mus., xix. 1897, p. 699; Alluaud, Liste Coléopt., p. 72; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 572.

10 males and 3 females from Aldabra agree with Kolbe's description (*l.c.*) of the subsp. *aldabricus* in having the yellow border of the same width as in the subsp. *africanus*, in being smaller (ca. 25 mm. long) than most specimens of that subspecies, in being somewhat short, and having the elytra rather conspicuously broadened behind the middle. 2 of the females, however, exhibit an excessively fine, but under a powerful lens quite distinct, sexual sculpture on the basal portion of the elytra: in this respect they approach the condition found in the Madagascar form *cinctus* (Sharp) and in some specimens in the British Museum from the Mascarene Islands. Kolbe states that in the Aldabra females examined by him and included in the subsp. *aldabricus*, there is no sexual sculpture in the ♀, which thus approaches nearer to the form *africanus*.

Loc. Aldabra: Takamaka, 1907 (Thomasset); 1908—9 (Fryer); 1895 (Voeltzkow), 1893 (Abbott). Distributed in various forms over S. Europe, Africa, Madagascar and Mascarene Islands, and S. and E. Asia to Australia.

EXPLANATION OF PLATE 12.

Fig. 1. *Oxyomus palmarum*, sp. nov.
Fig. 2. *Atœnius lodoiceæ*, sp. nov.
Fig. 3. *Nesohoplia senecionis*, gen. et sp. nov.
Fig. 4. „ „ „ „ „ labrum.
Fig. 5. „ „ „ „ „ mandible.
Fig. 6. „ „ „ „ „ maxilla.
Fig. 7. „ „ „ „ „ labium.
Fig. 8. „ „ „ „ „ tarsal claws, ♂.
Fig. 9. „ „ „ „ „ tarsal claws, ♀.
Fig. 10. *Adoretus versutus* Harold, claws of middle tarsus of ♂; *a*, dorsal view of end of bigger claw, drawn to larger scale, showing cleft.
Fig. 11. „ „ „ claws of middle tarsus of ♀.
Fig. 12. „ „ „ end of ædeagus; *a*, dorsal; *b*, ventral view.
Fig. 13. *Tachys seychellarum*, sp. nov.
Fig. 14. *Bidessus capitatus* Régimbart, var. ?, elytron.
Fig. 15. *Bidessus farquharensis*, sp. nov., elytron.
Fig. 16. *Copelatus pandanorum*, sp. nov., ♀.



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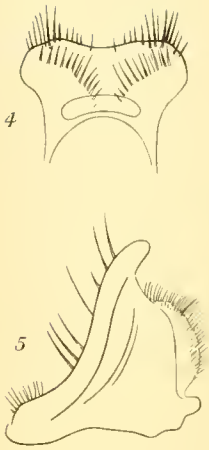

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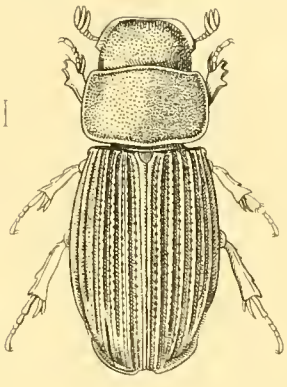

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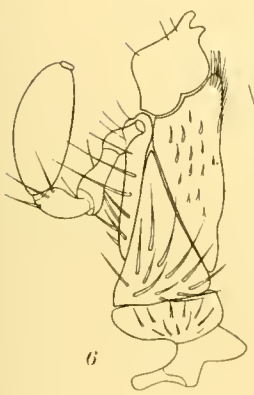

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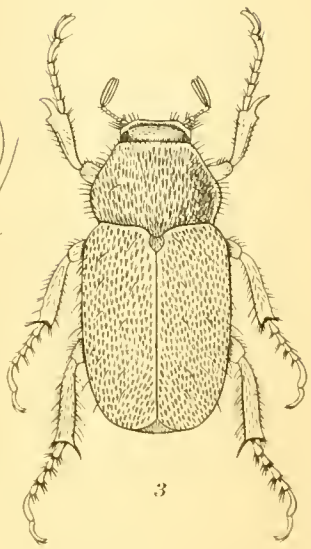

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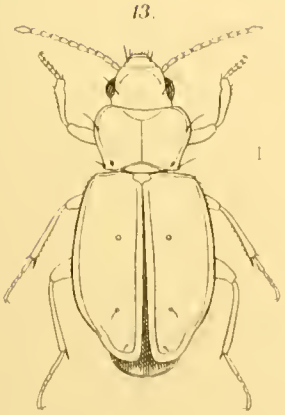
9.

a

12

b



13.

14

15

10

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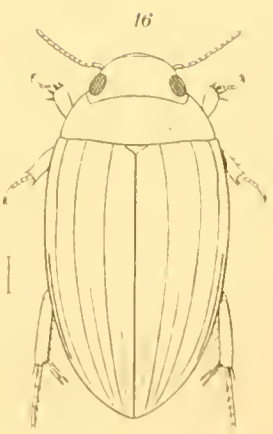


16

COLEOPTERA, LAMELLICORNIA AN. ADELPHAGA

No. XVI.—ORTHOPTERA: ACRYDIIDÆ, PHASGONURIDÆ, GRYLLIDÆ.

Par le Dr. Ignacio Bolivar.

(Planches **13** et **14**.)

(Communiqué par le Professeur J. Stanley Gardiner, M.A., F.R.S., F.L.S.)*

Lu le 20 juin 1912.

La série d'Orthoptères des Seychelles et des îles situées au Nord de Madagascar réunie au Musée Zoologique de l'Université de Cambridge et représentant le résultat des voyages du Professeur Stanley Gardiner et de Mr Hugh Scott et de Mr J. C. F. Fryer offre un intérêt tout particulier, non seulement par le nombre considérable d'espèces reeueillies mais aussi parce qu'elle nous permet de connaître les caractères de la faune de ces Archipels, pas suffisamment eonnue à présent. Grace à ees collections on peut apprécier une très grande différence entre les Archipels des Seychelles, Amirantes et Chagos et celui formé par les îles Aldabra, Cosmoledo, Assumption, etc. À ce dernier correspond un plus grand nombre de formes africaines, car, outre le *Gastrimargus marmoratus* Thunb., *Paratettix scaber* Thunb., *Acheta bimaculata* De Geer, *Curtilla africana* Pal. de Beauv. qui sont à la fois des formes africaines et asiatiques on trouve deux *Catantops* de type africain, *Acrotylus patruelis* Sturm., *Phaneroptera nana* Charp. et le genre *Conipoda* Sauss. Il ne faut cependant pas oublier que toutes ces formes sont ailées ce qui en facilite la dispersion, de telle sorte que deux d'entre elles se retrouvent même jusqu'en Europe.

La faune des groupes des Seychelles et Amirantes est plus originale, on y trouve un nombre considérable de genres propres, *Procytettix*, *Coptottigia*, *Rhyncotettix*, *Gryllapterus*, *Phœogryllus*, *Seychellesia*, *Phalangacris*, et *Zarceus*, qu'on ne retrouve pas ailleurs et qui donnent un caractère propre à la faune de ces îles. On pourrait dire à en juger par les matériaux réunis dans cette collection, que la faune de toutes ces îles renferme un fond commun africano-indien, outre des formes spéciales très nombreuses, notamment dans le groupe Amirante-Seychelles, car une vingtaine des espèces décrites appartiennent à ces îles.

La faune de Chagos apparaît aussi très spéciale, toutefois elle reste en rapport avec celle des Seychelles, comme le prouve le genre si curieux *Scottia* formé par de très petits grillonniens aptères, dont une espèce a été trouvée à Silhouette et à Chagos la deuxième.

* [I am indebted to Mr Hugh Scott for kindly reading the proofs of this paper. He has also selected the specimens for illustration and added the localities where the species were obtained. J. S. G.]

Je ne dois pas terminer sans exprimer mon admiration pour le nombre considérable d'espèces réunies qui démontre le labeur extraordinaire réalisé par les savants explorateurs qui les ont recueillies. Les Orthoptères, en général, sont peu nombreux dans tous les pays et ceux observés aux Seychelles dépassent, à ne pas douter, le nombre de ceux qu'on pourrait espérer de trouver dans cette faune.

Quant aux noms adoptés pour la désignation des espèces je crois bon de dire que j'ai suivi le catalogue récemment publié par Mr Kirby, bien que je ne sois pas d'accord avec certains changements, mais je crains d'augmenter la confusion que existe déjà dans la synonymie des Orthoptères et je pense que la mission des Congrès devrait être de fixer d'une manière définitive les noms à employer, pour éviter que chaque auteur adopte des variations quoiqu'elles paraissent justifiées. Seulement j'ai cru plus utile de conserver les noms anciens des familles des Acrydiidæ et des Gryllidæ puisque les noms d'*Acrydium* et *Gryllus* subsistent dans ces familles, que de changer ces noms par ceux de Locustidæ et Achetidæ, le premier ayant été employé jusqu'à présent pour une autre famille et le second étant moins commune que celui de Gryllidæ.

Fam. **Acrydiidæ.**

Gen. Systolederus, Bolivar.

1. *Systolederus*, sp.

Loc. Seychelles : Mahé, 1906 (Thomasset).

Un seul individu, très jeune, dont on ne peut déterminer l'espèce ; cependant cette trouvaille a beaucoup d'intérêt parce que toutes les espèces sont de la région orientale, Ceylan, Sumatra, Philippines, Burmah.

Gen. Ocytettix, Hancock.

2. *Ocytettix pupulus*, sp. nov. (Pl. **13**, fig. 1).

Obscure ferrugineus. Vertex inter oculos lateribus sinuatus, antrorsum ampliatus, carina media antice distincte compresso-producta, utrinque fossulatus, rugulosus, postice nodulo parvo instructus, ab antico visus medio et supra oculos acute productus. Oculi distincte prominuli, exserti. Antennæ filiformes, longiusculæ, angulum posticum loborum pronoti subattingentes. Pronotum impresso-punctatum et inter sulcos transversos subtuberculatum, antice truncatum, postice ad medium femorum posticorum extensum, angulatim excisum ; carinis lateralibus in prozona parallelis, carina media inter humeros elevato-rotundata, gibbosa, in metazona parum elevata sed apicem versus compressa, dorso inter humeros utrinque nodulo elongato, compresso et in processu carinis obliquis instructo ; carinis lateralibus fortiter compresso-elevatis atque biundatis ; angulo postico loborum lateralium extrorsum verso, apice oblique truncato. Elytra alæque nullæ. Femora antica, carinis compressis, superioribus undatis, inferioribus dentatis. Femora postica carinis angustissime compressis, superne lobata et minute crenulata, inferne pone medium unidentata ; pagina externa convexa, carinis obliquis, compressiusculis, carina inferiore externa bigibbosa. Tibiæ posticæ marginibus regulariter spinosæ. Tarsi postici

pulvillis tribus subæque longis, vel pulvillo secundo minore. Abdomen segmentis dorsalibus margine postico bidentatis. Ovipositor valvulis elongatis, fortiter dentato-spinosis.

Long. corp. ♂ 6,8; pron. 3,5; femor. post. 4,2 mill.

Long. corp. ♀ 10; pron. 4; femor. post. 4,5 mill.

Loc. Seychelles. "Silhouette: high forests near Mt Pot-à-eau and Mare aux Cochons, VIII.—IX. 1908."

Malgré le pronotum tronqué en arrière je range cette espèce dans le genre *Ocytettix* Hanc. (1907, Trans. Ent. Soc. London, p. 226) dont la diagnose devra se modifier quelque peu mais dans des particularités non-essentielles. Le *Ocytettix latihumerus* Hanc., la seule espèce connue jusqu'à présent, provient de la Baie d'Antongil au N.E. de Madagascar.

3. *Ocytettix nymphula*, sp. nov.

Statura minore; antennæ brevissimæ, angulum posticum loborum pronoti haud attingentes; oculi minus exserti; vertice angustiore, carina media subindistincta antice haud producta, postice inter oculos linea transversa elevata instructo. Pronotum postice truncatum. Pedes breviores, fusco-annulati. Tarsi postici breviores.

Long. corp. ♂ 6,5; pron. 3; fem. post. 3,5 mill.

Long. corp. ♀ 8; pron. 3,5; fem. post. 4 mill.

Loc. Seychelles. "Silhouette: high forests, VIII.—IX. 1908. Mahé, 1908—9: high forest of Morne Blanc and Morne Pilot; high forest behind Trois Frères; forest above Cascade Estate; Mare aux Cochons district, 1—2000 ft."

J'ai fait la description d'après deux exemplaires ♀ et ♂ de Silhouette qui me semblent adultes. Ceux de Mahé ne me semblent pas différer de ceux-ci. L'espèce étant tout à fait aptère, il est difficile de distinguer les jeunes des adultes; cependant la longueur des antennes et la présence de la dent des fémurs postérieurs en avant des genoux peuvent servir pour en faire la distinction.

Gen. Procytettix, gen. nov. (Pl. **13**, fig. 2).

Vertex antrorsum oblique ascendens, a supero visus oculo parum latior, elongatus, longior quam latior, ante oculos distincte productus, antice medio carinula producta et utrinque rotundatus. Frons obliqua, inter oculos carina media perfecte explicata ante oculos furcata, marginibus subparallelis leviter distantibus. Ocelli postici fere inter margines anteriores oculorum siti. Oculi magni, superne elongati subexserti, a latere visi apicem versus sensim angustati. Antennæ 13-articulatæ, distincte ante oculos insertæ, breves, filiformes. Pronotum antice truncatum, postice medium femorum posticorum haud attingens, truncatum vel sinuatum, dorso plus minusve tectiforme medio distincte carinato et inter humeros gibbuloso tuberculatoque, carinis lateralibus prope marginem anticum parallelis, in metazona ab angulis humeralibus usque ad apicem acutis, undatis; angulo postico loborum lateralium obtusato extrorsum indistincte expanso. Pedes elongati. Femora 4 antica angusta, carinis haud vel parum dilatatis. Tibiæ

posticæ carinis regulariter dentatis. Tarsi elongati, articulo basali articulis duobus sequentibus unitis distincte longiore. Abdomen superne compressum haud dentatum. Ovipositor valvulis denticulatis.

Genre prochain d'*Ocytettix* et aptère. La présence de la dent antégéniculaire aux fémurs postérieurs permet de considérer comme adultes les exemplaires décrits. Je n'ai pu examiner que deux individus adultes et un jeune.

4. *Procytettix fusiformis*, sp. nov. (Pl. **13**, fig. 2).

Fuscus vel griseus, obscure variegatus. Caput superne leviter rugosum. Fastigium verticis ante oculos productum, a latere visum parte producta dimidia altitudine oculorum haud longiore. Pronotum superne rugulosum, pone sulcum medium nodulis nigris obtusis dorsalibus quattuor : dorso inter humeros subgibbuloso, apice truncato-sinuato. Femora postica carina dorsali dente geniculari instructa. Tarsi postici pulvillis elongatis, obtusis, pulvillis duobus primis subæque longis, pulvillo tertio secundo vix longiore.

Long. corp. ♂ 7 ; pron. 3,8 ; fem. post. 4 mill.
Long. corp. ♀ 10 ; pron. 4,2 ; fem. post. 5,5 mill.

Loc. Seychelles. "Mahé : high damp forest at summit of Morne Pilot, over 2000 feet, 1908."

Gen. Paratettix, Bolivar.

5. *Paratettix chagosensis*, sp. nov. (Pl. **13**, fig. 3).

P. meridionali valde affinis ; angustior, carinis anterioribus prothoracis magis distantibus ; elytris minus oblongis, brevioribus ; pedibus intermediis minoribus, præcipue in ♂ ; carinis femorum intermediorum minus expansis, leviter sed distincte undatis ♀, vel subintegris ♂. Costa frontalis integra a latere visa convexa, inter oculos haud sinuata. Antennæ distincte inter oculos sitæ. ♂ femora intermedia quam antica haud validiora, carina inferiore subundata.

Long. corp. ♂ 7,5 ; pron. 7,5 ; fem. post. 4,5 mill.
Long. corp. ♀ 8 ; pron. 9 ; fem. post. 5 mill.

Loc. Chagos Islands : Diego Garcia, Pointe Marianne, 10. VII. 1905.

Ce qui caractérise principalement cette espèce et contribue à la distinguer du *P. meridionalis* Ramb., ce sont les fémurs intermédiaires qui sont à peine plus grands que les antérieurs, notamment chez le ♂, et dont les carènes sont moins dilatées et très peu festonnées. Le corps est plus étroit et les carènes antérieures du pronotum sont plus séparées entre elles, la prozone étant dans cette partie antérieure plus large, transverse entre les carènes, tandis que dans *meridionalis* Ramb. cette portion chez le ♂ est à peine transverse, l'étant davantage dans la ♀.

Les pulvilli du métatarse postérieur sont très aigus, se terminant par une épine, le dernier est plus court que les deux autres réunis. J'aurais cru par la provenance avoir à faire au *Paratettix voeltzkovviana* Sauss. de Nossi-Bé, mais il y a dans la description de cette espèce de particularités qui me font penser que cette espèce pourrait n'appartenir pas au genre *Paratettix* : "verticis rostrum lanceolatum, carinatum, apice acutum."

6. *Paratettix scaber* (Thunberg), Nova Acta Upsal., vii. p. 159 (1815).

Loc. Aldabra, 1908—9 (Fryer). Seychelles: "Mahé; marshy country near coast at Anse aux Pins and Cascade; Cascade Estate: Félicité, 1908, from a coconut-plantation."

Espèce d'Afrique mais qui s'est retrouvée aussi aux Indes orientales.

Gen. Coptottigia, gen. nov. (Pl. **13**, fig. 4).

Corpus compressiusculum. Caput haud exsertum. Vertex antrorsum subangustatum, deplanatum, antice carinis transversis nullis, carinis lateralibus utrinque ad oculos perfecte explicatis antice interruptis, carina media compressa, cum carina frontali continua, a latere visa rotundata. Frons obliqua, marginibus antrorsum parum divergentibus. Antennæ filiformes, articulis 13 compositæ, articulis 6 apicalibus longioribus, inter oculos insertæ. Pronotum acute tectiforme, antice obtuse productum, postice apicem versus leviter deplanatum et obtuse sinuatum; carinis lateralibus tantum pone humeros explicatis; lobis lateralibus angulo postico obtuso postice subtruncato, margine inferiore leviter extrorsum verso, postice indistincte sinuato. Elytra nulla. Femora antica elongata superne carinata. Femora postica carina superiore ante apicem dente instructa. Tibiæ posticæ superne sulcatæ, apicem versus leviter ampliatæ, marginibus spinosis.

Ce genre se rapproche de *Coptotettix* Bol. dont il diffère par le pronotum en toit aigu, la carène frontale plus saillante entre les antennes, le manque d'ailes, &c.

7. *Coptottigia cristata*, sp. nov. (Pl. **13**, fig. 4).

Fusco-testacea, crista dorsali pronoti nigro- et testaceo-maculata. Vertex inter oculos oculo haud vel vix latior. Antennæ basi apiceque pallidæ. Costa frontalis inter antennas prominula, rotundata, haud sinuata. Pronotum impresso-punctatum, antice angulatim productum, postice apicem femorum haud superans, carinis lateralibus pone humeros fusco-trimaculatis. Femora carinis fusco- et testaceo-variegatis. Tibiæ anticæ medio annulo testaceo, posticæ fuscæ. Articulus primus tarsorum posticorum pulvillis tribus æque longis.

Long. corp. ♂ 10; pron. 9,5; fem. post. 6 mill.

Long. corp. ♀ 12; pron. 11; fem. post. 7 mill.

Loc. Seychelles. "Silhouette; found among damp dead leaves in the high forests near Mont Pot-à-eau and Mare aux Cochons. Mahé; summit of Morne Pilot, over 2000 ft.; slopes of Morne Seychellois, about 1500 ft., &c."

Un exemplaire de Silhouette est de couleur testacée le long du dos; il a la crête ornée de taches noires et les tarses pâles.

Gen. Pœdes, Karsch.

8. *Pœdes cruciformis* Bolivar, Ann. Soc. Ent. France, vol. lxiv. p. 376 (1895). (Pl. **13**, fig. 5).

Loc. Seychelles. Mahé, 1905 and 1908—9; Silhouette, 1908—9; "from the mountain-forests, sitting on leaves of trees, &c."

La forme des parties anales mérite aussi quelques détails. L'abdomen est claviforme ou gonflé vers l'extrémité. Le segment anal du ♂ est évasé en arrière et élevé au milieu formant une apophyse divisée en deux dents obtuses et à bords noirâtres. Le dernier segment ventral est grand, convexe, avec un court sillon à la base, tronqué au bout mais élargi de chaque côté en lame dont le bord postérieur très long est droit. Ces lames encaissent une prolongation moyenne assez longue et élargie vers l'extrémité, parcourue par un sillon dont les bords sont renflés, notamment vers l'extrémité, qui est de couleur noirâtre. Ce procès est parfois tout à fait noir, de même que le bord postérieur de l'avant-dernier segment abdominal d'un côté et d'autre.

Des exemplaires mieux conservés que ceux qui m'ont servi pour décrire cette espèce me permettent d'en modifier la description quant à la coloration, qui est d'un vert-jaune clair après la mort*. La partie supérieure de la tête est brune dans quelques exemplaires et le dos du pronotum d'une couleur châtaine, ainsi que le dos de l'abdomen.

Gen. Æolopus, Fieber.

9. *Æolopus laticosta*, sp. nov.

Fusco-griseus. Caput crassiusculum, superne fuscum, plus minusve griseo-fasciatum. Vertex inter oculos latiusculus; fastigio concaviusculo, rhomboidali; foveolæ distincte elongatæ, antrorsum subangustatæ. Costa frontalis lata ad verticem coarctata, inter antennas grosse impresso-punctata, infra ocellum magnum convexa, sparse punctata. Antennæ filiformes crebre et minute punctatæ, fusco-fasciatæ, apicem versus fuscæ. Pronotum postice obtuse angulatum vel subrotundatum, antice coarctatum, sulcis transversis valde impressis et fusco-repletis, sulco postico vix ante medium sito; dorso fusco, haud vel imperfecte pallide cruciato; lobis deflexis parallelis, altis, fusco-variegatis, macula albida superne prope marginem anticum nec non medio inter sulcos. Elytra apicem femorum valde superantia, extus maculis magnis fusco-nigris per spatia transversa hyalina divisis; spatio primo hyalino introrsum angustato. Alæ fuscæ, basi interna dilute citrina. Femora postica brevia, basi lata, intus nigra ante apicem flavo-annulata, subtus subsanguinea; extus nigro-fusco-varia, ante apicem annulo pallido, superne obscure trifasciata. Tibiæ posticæ basi late nigra, vel basi et annulo ante medium sito nigris, pone medium flavæ et subcæruleæ, prope apicem inferne infuscatæ: variat, tibiæ apicem versus rufescentes. ♂ Lamina subgenitalis breviter conica, apice obtuso sursum directo, pilosa.

Long. corp. ♂ 20; pron. 3,5; elytr. 20; fem. post. 12 mill.
Long. corp. ♀ 25; pron. 4,2; elytr. 24; fem. post. 14 mill.

Loc. Chagos Islands, 1905: Diego Garcia; Peros Banhos Atoll; Salomon Atoll. Farquhar Atoll, 1905.

Cette espèce ressemble beaucoup à *Æ. famulus*, mais la grosseur de la tête, la forme des fossettes du vertex bien plus longues, la largeur de la côte frontale et sa ponctuation, la forme du pronotum et la longueur moindre de la métazone, permettent de la distinguer facilement.

* Bright green during life.—H. Scott.

10. *Æolopus aldabrensis*, sp. nov.

Parvus, colore multo variabile. Caput crassiusculum. Vertex inter oculos pallidus vel vitta media pallida ornatus. Fastigium subrhomboidale, concaviusculum, antice attenuatum. Foveolæ verticis antrorsum angustatæ, marginibus punctatis. Costa frontalis, ante ocellum distincta, vage punctata, ad fastigium angustata. Antennæ unicolores. Pronotum carinula media percurrente a sulco postico interrupta, metazona quam prozona sesqui longiore, postice obtusangula. Elytra apicem femorum posticorum quinta parte superantia, fascia pallida ante et pone medium; vena intercalata ad apicem versus venam radialem vergente. Femora postica brevia basi latiora, fere ut in *Æ. strepente* constructa. Tibiæ posticæ basi pallidæ, denique cæruleæ, annulo ante medium apiceque præcipue subtus nigris. Lamina subgenitalis ♂ breviter conica.

Variat. A. Rufo-testaceus fusco-variegatus; capite pronoto elytrisque fuscis, fascia media cephalothoracica fasciaque humerali elytrorum pallidis; femora postica transverse fusco-fasciata.

Variat. B. Pallide testaceus; capite pronoto, area scapulari elytrorum nec non femoribus posticis viridibus; elytra campo radiali infuscato, transverse pallide fasciato.

Variat. C. Rufo-testaceus, nigro-irroratus.

Long. corp. ♂ 19; pron. 2,8; elytr. 14; fem. post. 8,5 mill.

Long. corp. ♀ 29; pron. 4; elytr. 20; fem. post. 12 mill.

Loc. Aldabra, 1908—9 (Fryer). Assumption, 1910 (Dupont). Cosmoledo, 1907 (Thomasset). St Pierre, 1907.

Prochain de *Æ. strepens* Latr. mais plus petit avec le pronotum plus contracté au milieu. Il pourrait être voisin aussi de *sansibaricus* Karsch, que cet auteur compare avec *tergestinus*, mais la côte frontale n'est pas sillonnée dans *aldabrensis*, le pronotum étant convexe supérieurement.

11. *Æolopus dociostauroides*, sp. nov.

Parvus, griseus, fusco-nigro-varius. Caput superne pallidum. Vertex inter oculos utrinque macula fusca, fastigio subpyriforme, concaviusculo; foveolæ verticis antrorsum parum angustatæ, trapezoidales. Costa frontalis ante ocellum minutum obliterata, fastigium versus sensim angustata, leviter impresso-punctata. Antennæ filiformes basin versus angustatæ, pallidæ, pone medium fusco-annulatæ. Pronotum linea media parum elevata, sulco typico vix ante medium sito, margine postico obtuse angulato vel subrotundato, pallido, lineis pallidis marginalibus fasciam fuscam internam limitantibus, lobis deflexis ad dorsum fusco-variegatis. Elytra apicem femorum parum superantia, fusca, lineis duabus transversis griseis angustis signata, campo dorsali griseo. Alæ limpidæ hyalinæ. Femora postica intus extusque fusco-trifasciata. Tibiæ posticæ pallidæ, basi, annulo ante medium apiceque fuscæ.

Long. corp. ♂ 17; pron. 3; elytr. 15; fem. post. 9,5 mill.

Long. corp. ♀ 23; pron. 4,5; elytr. 20; fem. post. 13 mill.

Loc. Seychelles: "Mahé, 1908; Félicité, plantation near coast, 1908; Bird Island, 1908; Coetivy, 1905. Amirantes, 1905: Poivre, d'Arros and Desroches."

Le ♂ ressemble tout à fait par la taille et la coloration à certaines variétés de *Dociostaurus genei* Ocsk. La coloration est très caractéristique notamment par les élytres, qui sont noirs avec une ligne transversale étroite non élargie antérieurement, placée avant et une autre après le milieu de l'élytre. Je rapporte aussi à cette espèce un exemplaire ♀ des Îles Amirantes (d'Arros). Cette espèce se distingue de *fasciatipes* par sa taille plus petite.

12. *Æolopus fasciatipes*, sp. nov.

Pallide testaceus, fusco-variegatus. Caput minus crassum, inter oculos linea fusca arcuata transversa. Vertex obovatus, inter oculos quam costa frontalis ad ocellum vix latior. Frons leviter obliqua, costa fastigium versus sensim angustata minute impresso-punctata ad ocellum leviter impressa. Antennæ fusco-annulatæ, breves, in ♀ marginem posticum pronoti haud attingentes. Pronotum linea media elevata, a sulco typico longe ante medium sito tantum intersecta, dorso in metazona late infuscato, lateribus linea pallida subdecussata in prozona valde sinuata et extus fusco-terminata; lobis deflexis medio striga nigra nitida atque macula pallida ad medium. Elytra apicem femorum superantia, campo anali griseo-testaceo, campis externis fuscis pallide interruptis, ante et pone medium fascia pallida transversa, tertia parte apicali hyalina fusco-maculata. Alæ hyalinæ, venis apicem versus obscurioribus. Pedes elongati, pallidi, fusco-fasciati et griseo-villosi. Femora postica planiuscula basi lata, extus fasciis tribus transversis interruptis in maculas solutas, area supera externa haud fasciata, intus fasciis tribus atque geniculis fuscis. Tibiæ posticæ pallidæ, dimidio apicali cæruleo, basi annulisque duobus, primo ante medium secundo ad apicem, fuscis, spinis pallidis apice nigro armatæ. Lobi mesosternales in ♂ vix, in ♀ satis, distantes. Corpus subtus flavescens.

Long. corp. ♂ 19 ; pron. 3,5 ; elytr. 17 ; fem. post. 11 mill.

Long. corp. ♀ 27 ; pron. 5 ; elytr. 24 ; fem. post. 19 mill.

Loc. Farquhar Atoll, 1905 : Providence, Cerf Island, 3. X. 1905.

Cette espèce ressemble un peu à *strepens* par ses formes, mais les fémurs postérieurs ne sont pas aussi larges et les jambes postérieures sont bleues dans leur moitié postérieure. Mr Kirby a décrit une espèce (*Epacromia rufostriata*, Proc. Zool. Soc., 1888, p. 550, et dans "Christmas Island monograph") qui pourrait être voisine de celle-ci, mais la description ne fournissant d'autres caractères que ceux des couleurs, ne permet pas d'en affirmer l'identité, même malgré la figure de la Pl. XIII. Du reste Mr Walker en a décrit plusieures espèces qu'on ne pourra reconnaître qu'à l'aide des exemplaires originaux.

13. *Æolopus perpusillus*, nom. nov.

Epacromia tamulus (Fabr.), var. *pusilla* Bolivar, Ann. Soc. Ent. France, vol. lxiv. p. 378 (1895).

Loc. Seychelles : "Praslin, 1905, and from plantations at Grande Anse in 1908 ; Félicité, from a plantation near the coast, 1908 ; Bird and Dennis Islands, 1908 ; Mahé, Long Island, and from dry scrubby country below Morne Blanc, 1908. Amirantes : Desroches, 1905."

Je l'ai indiquée aussi de La Digue et de Mahé. J'ai vu deux exemplaires de Poivre (Amirantes) et de Mahé qui pourraient peut-être se rapporter à cette espèce bien que leur taille soit beaucoup plus forte.

Je suis obligé de changer le nom *pusilla* car il existait déjà une *Epacromia pusilla* Walker.

14. *Æolopus thalassinus* (Fabricius), Spec. Ins., i. p. 367 (1781).

Loc. Coetivy, 1905. Europe, Nord d'Afrique, &c.

Je n'ai vu que trois exemplaires de cette provenance, dont les couleurs ne sont pas fraîches et ne permettent pas de juger de la coloration des jambes postérieures.

Gen. Gastrimargus, Saussure.

15. *Gastrimargus marmoratus* (Thunberg), Mém. Acad. Pétersb., v. p. 232 (1815).

Loc. Aldabra, 1907 (Thomasset).

Espèce d'Afrique et d'Asie très variable. L'exemplaire que j'ai examiné se rapproche par sa taille et par la coloration des formes de Madagascar.

Gen. Locusta, Linné (Kirby).

16. *Locusta danica* Linné, Syst. Nat., (ed. xii.) i. p. 702 (1767).

Loc. Seychelles: "Mahé, 1905; Bird Island, 1908; Félicité, 1908; Praslin, plantations at Grande Anse, 1908. Amirantes: Poivre, Desroches, d'Arros and Eagle Islands, 1905."

Je l'avais indiquée comme se trouvant à Praslin.

C'est l'espèce commune en Europe; elle se trouve aussi en Afrique et en Asie et s'étend jusqu'à la Nouvelle Hollande, la Nouvelle Zélande et la Polynésie.

Gen. Acrotylus, Fieber.

17. *Acrotylus patruelis* (Herrich-Schaeffer), Faun. Ins. Germ., clvii., Pl. XVIII. (1838).

Loc. Aldabra, 1908—9 (Fryer).

Espèce de l'Europe méridionale qui se retrouve aussi en Afrique.

Gen. Conipoda, Saussure.

18. *Conipoda aldabræ* Saussure, Abhandl. Senckenb. Ges., xxi. p. 632 (1899).

Loc. Aldabra, 1908—9 (Fryer). Cosmoledo, 1907 (Thomasset). Assumption, 1909 and 1910 (Dupont).

Le genre renferme une autre espèce, *C. calcarata* Sauss., de Madagascar, de l'Afrique orientale et de l'Afrique occidentale.

Gen. Rhynchotettix, gen. nov. (Pl. **13**, figs. 6, 7).

Corpus compressiusculum. Caput breviter conicum. Fastigium horizontaliter valde productum, triangulare, acutum, cum vertice in eodem plano jacens, sulcatum: intervallum oculorum costa frontali haud vel vix latius. Frons valde reclinata, carinis lateralibus sat divergentibus. Costa frontalis inter antennas modice elevata, marginibus subparallelis, ante ocellum divergentibus obliteratis. Antennæ filiformes, elongatæ. Pronotum capite

vix longius, superne subcylindricum, sulcis impressis, sulco postico longe pone medium sito, sulcis duobus ultimis per lobos laterales longe extensis; lobis deflexis elongatis, margine inferiore antice obliquo pone medium obtusissime angulato. Elytra apicem femorum posticorum vix attingentia, venis crassis, areolis in dimidio basali fortiter impressis; limbo costali anterius angustissime membranaceo, enervi. Femora postica parum compressa, extus convexiuscula, ante apicem haud gracilescentia, carina dorsali apicem versus obliterata et apice non producta; lobis genicularibus apice truncato-rotundatis. Tibiæ posticæ quam femora valde breviores, apicem versus haud ampliatæ, marginibus obtusis, spinis extus 7—8, intus 7, spina apicali externa nulla. Tarsi postici elongati, articulo secundo primo dimidio breviore, articulo ultimo gracili, articulis duobus primis unitis longiore. Tuberculum prosternale transversum, basi latum. Lobi meso-sternales subtransversi, postice valde rotundati, inter se valde distantes; lobi metasternales in ♂ sutura contigui, in ♀ leviter contigui. Abdomen cylindricum, in ♂ apicem versus pilosum, segmento ventrali penultimo ♂♀ apice area nitida, subcallosa. Lamina supraanalis ♂ trigona, elongata. Cerci attenuati, breves. Lamina subgenitalis conica, obtusa. Valvulæ ovipositoris elongatæ apice sinuatæ.

Le placement de ce genre reste pour moi douteux et, malgré le défaut d'épine apicale externe aux jambes postérieures, je crois qu'il doit être placé dans la division 1 de Brunner (Système des Orth.) où il prendrait place à côté des *Cranaë* Stål dont il a un peu la forme, ou près des Oxyiæ (*Racilia*, *Tauchira*) par le deuxième article des tarses postérieurs, de moitié plus court que le premier. Cependant et malgré ce dernier caractère, je placerais provisoirement cet insect près des *Cranaë* par suite de la carène frontale qui s'oblitère antérieurement, et par la longueur des antennes et des tarses postérieurs, dont le dernier article est plus long que les deux premiers pris ensemble.

Les jeunes ont une coloration toute différente; ils ont le corps d'un brun châtain, roussâtre vers le bas et le dos parcouru par une bande pâle. Le fastigium du vertex est très aigu.

19. *Rhynchotettix gardineri*, sp. nov. (Pl. **13**, figs. 6, 7).

Viridi-olivaceus. Oculi castanei. Fastigium inter oculos sulcatum, antice acutum apice leviter declive. Antennæ, articulis duobus basalibus ♂ vel articulis 4 vel 5 primis ♀ exceptis, nigræ. Costa frontalis inter antennas sulcata, ante ocellum coarctata, deplanata. Caput superne punctato-seriatum. Pronotum vage punctatum, antice amplectens, sinuatum, postice breviter rotundato-productum; metazona brevissima quarta parte pronoti haud superante, minute impresso-punctata; lobis deflexis marginibus inferiore et postico anguste incrassatis, sinu humerali obtusissimo. Elytra angusta, rufescenti-violacea, venis longitudinalibus flavescentibus vel virescentibus. Alæ fusco-subviolaceæ. Femora viridia, arcu geniculari externo nec non lobo geniculari interno nigris. Tibiæ posticæ in ♀ ferrugineæ, in ♂ cœruleæ vel externe virescentes, basi apiceque inferne obscuriores.

Long. corp. ♂ 32; antenn. 19; pron. 5; elytr. 17; fem. post. 14 mill.

Long. corp. ♀ 40; antenn. 19; pron. 7; elytr. 21; fem. post. 17 mill.

Loc. Seychelles. "Mahé: Cascade, Morne Seychellois, etc. 1905; forest above

Cascade (♂ and ♀ *in coitu*), Mare aux Cochons district, etc., 1908—9. Silhouette: high forests, 1908. This species was only found in the high mountain-forests, sometimes in the highest and dampest parts.

N.B. Colour during life: head, pronotum, anterior and middle legs, and posterior femora very brilliant green. Elytra with greenish-yellow veins, interstitial parts dark with violet tinge. Wings delicate violet near the costa, the rest infuscate. Posterior tibiæ bright red in ♀, in ♂ blue above and greenish-blue beneath, the apices of the spines dark in both sexes."—(H. Scott.)

Gen. Catantops, Schaum.

20. *Catantops insulanus* Karny, Sitz. der k. Akad. Wiss. Wien, 1907, cxvi. pp. 319, 342.

Loc. Aldabra, 1907 et 1908—9. Assumption, 1909 (Dupont). Cosmoledo, 1907 (Thomasset).

Malgré les différences qu'offrent les exemplaires que j'ai examinés je crois bien qu'ils appartiennent tous à l'espèce de Karny. Les fémurs ont une tendance à avoir l'aire externe obscurcie, mais je considère cette coloration comme produit d'une mauvaise dessiccation ; la deuxième des bandes dorsales des mêmes fémurs ne se continue pas sur l'aire externo-médiane. La partie inférieure de ces fémurs est noire et l'arête inférieure de l'aire interno-médiane est d'un roux sanguin, l'aire interno-médiane étant occupée par une grande tache noire divisée ou presque divisée vers le milieu du fémur. L'espèce n'était indiquée que de l'île d'Aldabra.

21. *Catantops axillaris* (Thunberg), Mém. Acad. Pétersb., ix. pp. 399, 426 (1824).

Loc. Cosmoledo.

Exemplaire de grande taille avec les jambes postérieures jaunes tachées de noir, non-coloriées de rouge à la face inférieure. Indiquée de Massaua, Zanzibar, Milanji et Sudsomali dans la côte orientale d'Afrique ; elle se trouve aussi au Sénégal, îles du Cap Vert, &c., sur la côte occidentale. C'est très prochaine de *brunneri* Karny.

Gen. Cyrtacanthacris, Walker.

22. *Cyrtacanthacris tatarica* (Linn.) Stål.

Loc. Assumption, 1909 (Dupont). Aldabra, 1907 et 1908—9. Astove, 1907. Cosmoledo, 1907.

Exemplaires de taille et de coloration très différentes. Je crois que c'est à tort que Mr Kirby réserve le nom de *tatarica* pour *Schistocerca peregrina* Ol.

Fam. **Phasgonuridæ.**

Gen. Phaneroptera, Serville.

23. *Phaneroptera nana* Fieber, Lotos, iii. p. 173 (1853).

Loc. Aldabra, 1908—9 (Fryer). Assumption, 1910 (Dupont). Cosmoledo, 1907 (Thomasset).

Cette espèce se retrouve en Afrique et aussi dans l'Europe méridionale.

Gen. Allodapa, Brunner.

24. *Allodapa rostrata* Brunner, Mon. Phaneropt., p. 222 (1878).

Loc. Seychelles. "Mahé: Cascade Estate, 1905 and 1908—9; &c. Silhouette: Mare aux Cochons, about 1000 ft., 1908; &c."

Quatre exemplaires dont deux sont femelles, ce qui me permet de signaler ses caractères. Monsieur Brunner a donné les dimensions de la ♀, mais c'est par erreur typographique, car il se réfère au ♂.

♀ Ovipositor pronoto duplo longior, sensim incurvus, lævis, acuminatus, apicem versus præcipue in latere infero crenulatus. Lamina subgenitalis fortiter transversa, truncata, brevis.

Long. corp. ♀ 26; pron. 5,9; elytr. 37; fem. post. 19,5; ovipos. 11,9 mill.

Loc. Mahé, 1908—9; Silhouette, 1908.

Le rameau radiaire de l'élytre est simplement fourchu comme chez le ♂, tandis qu'il est tri-rameux dans *Allodapa aliena* Brunner.

Gen. Plangia, Stål.

25. *Plangia ovalifolia*, sp. nov. (Pl. **13**, fig. 8).

Pallide virescens. Fastigium verticis foveolatum, articulo primo antennarum sesqui latius, cum fastigio frontis lineola contiguum. Antennæ fuscæ basin versus pallidæ. Oculi fusci. Pronotum supra planum, antice sinuatum, postice rotundatum, medio impressione lyrata instructum, linea longitudinali media haud distincta, canthis lateralibus rotundatis; lobis deflexis altioribus quam longioribus, margine antico pone oculos subsinuato, postico rotundato. Elytra ovata, margine postico fere recto, antico medio distincte arcuato, pone medium anguste pallescenti; venis radialibus contiguis, fere rectis; vena radiali antica prope basin distincte ampliata, ramo radiali vix ante medium oriente et ante medium furcato; vena ulnari antica ramos parum distinctos versus marginem posticum emittente; campo tympanali ♂ in elytro dextro speculo pellucido elongato, postice a vena incrassata bene delineato, antice imperfecte terminato; in elytro sinistro rotundato sed haud producto, vena plicata callosa perfecte explicata; area ulnari areolis minutis nigro-repletis prope venam analem ornata. Alæ campo triangulari apicali non producto. Femora marginibus haud dilatatis, antica spinis 4, intermedia 3 vel 4, postica 6 vel 7 armata. Tibiæ anticæ supra haud sulcatæ, subcylindricæ, posticæ sulcatæ, basi spinarum puncto fusco apposito. Segmentum anale postice truncatum. Lamina supra-analis trigona, subæquilateralis, subtuberculata. Cerci distincte incurvi, apice fusci. ♂.

Long. corp. ♂ 22; pron. 4,5; elytr. 29; Lat. medio elytr. 10; long. fem. post. 14 mill.

Loc. Aldabra (Fryer).

C'est une des plus petites espèces du genre; sa coloration est presque uniforme, d'un jaune pâle passant à verdâtre sur les élytres qui sont signés le long de la veine anale de très petits points noirs qu'on peut à peine distinguer à l'œil nu.

Les épines des jambes postérieures sont ornées d'un point noir à la base. Elle se distingue de *P. gramina* du Cap par les organes anals; ses élytres de coloration uniforme la distinguent de *guttatipennis* et de *nebulosa* Karsch ainsi que de *segonoides* Butl., et ses jambes à bords non dilatés la séparent de *laminifera* Karsch. *P. venata* Griff., c'est une espèce à taille plus robuste. Toutes les espèces habitent Madagascar ou l'Afrique.

Gen. Conocephaloides, Perkins.

Conocephalus, auct.

26. *Conocephaloides breviceps* (Redtenbacher), Verh. zool.-bot. Ges. Wien, xli. pp. 384, 417, pl. 3, fig. 42 (1891).

Loc. Chagos Islands, 1905: Egmont Atoll, Salomon Atoll, Diego Garcia, et Peros Banhos.

La différence entre *C. insulanus* Redt., *acuminatus* Fabr. et *breviceps* Redt. n'est pas toujours facile à établir et du reste le ♂ des deux premières espèces n'est pas connu. Il faudrait pouvoir examiner plusieurs exemplaires pour bien connaître la variabilité de la longueur du tubercule du vertex.

C. breviceps Redt. a été signalé à Ceylan, Pondichéry et à Java. On peut en dire autant des relations du *breviceps* avec *pallidus*, dont la principale différence (comparez les descriptions des deux espèces dans Redtenbacher, pages 100 et 103, (414—417)) en relation avec *acuminatus* se trouve dans le bord des élytres, qui dans *pallidus* devrait avoir une étroite marge noire qui manquerait dans *breviceps*, or dans l'un ou l'autre des exemplaires de Chagos on peut distinguer des indices de cette ligne noire. Il faudrait donc dépasser de plusieurs exemplaires de diverses provenances pour établir d'une manière définitive la validité de toutes ces espèces.

27. *Conocephaloides chagosensis*, sp. nov. (Pl. **13**, fig. 9).

Griseo-fuscus. Fastigium verticis dimidiam frontis longitudinem haud attingens, conicum, superne leviter convexum, deplanatum apice obtusum, subtus pallidum, basi distincte dentatum et a fronte divisum. Genæ infuscatæ linea albida obliqua ornatæ. Dorsum verticis et pronoti indistincte brunneo-lineatum; lobi laterales fusciores, lineis duabus prima mediana, secunda ad dorsum posita, pallidis, angulo antico obtusissimo, postico obtuso et rotundato; margine inferiore obliquo nigro et albido-limbato. Elytra femora postica valde superantia, margine antico nigro, campo radiali fusco vario. Pectus vitta nigra longitudinali interrupta ornatum. Femora 4 postica subtus obscurata; 2 antica spinis duabus, intermedia spinis tribus, armata; postica gracilia spinis compluribus armata. ♂.

Long. corp. ♂ 30 ; fastigii 2 ; pron. 8,5 ; elytr. 40 ; fem. post. 21 mill.

Loc. Chagos Islands, 1905 : Salomon Atoll.

Le vertex est plus court et moins pointu que dans *C. lineatipes* Bol.

28. *Conocephaloides nitidulus* (Scopoli), Del. Flor. Faun. Insubr., i. p. 62, Pl. 24 B (1786).

Loc. Seychelles : Mahé, Silhouette, Dennis Island, 1908—9 ; Praslin, 1905.

C'est l'espèce commune en Europe ; elle se trouve aussi en Afrique et en Asie.

Gen. Anisoptera, Latreille.

29. *Anisoptera iris* (Serville), Ins. Orth., p. 506 (1839).

Loc. "Seychelles : found among grass in clearings and plantations from coast up to 1000 ft. ; Mahé, Silhouette, Praslin, Dennis Island. Amirantes : Poivre, 1905. Assumption, 1910. Cosmoledo, 1907. Africa, Madagascar, Mauritius, &c."

Je crois intéressante de donner la taille des exemplaires de ces provenances comparativement aux dimensions que signale M. Redtenbacher.

Long. corp. ♂ 11,5 ; pron. 2,5 ; elytr. 15 ; fem. post. 12,5 mill.

Long. corp. ♀ 15 ; pron. 3 ; elytr. 19 ; fem. post. 16 ; ovip. 13 mill.

Long. corp. (d'après Redt.) ♂ 13 ; pron. 2,6 ; elytr. 16 ; fem. post. 13 mill.

Long. corp. (d'après Redt.) ♀ 16—21 ; pron. 3—3,5 ; elytr. 21—25 ; fem. post. 17—19 ; ovip. 15—17 mill.

J'ai vu encore des exemplaires de Praslin dont la taille ne dépasse pas 11,5 mill. On n'a pas remarqué que je sache, la disposition singulière des épines des tibias antérieures chez le ♂, elles sont tout à fait couchées le long des bords, en sorte qu'elles ne sont pas saillantes.

30. *Anisoptera maculata* (Le Guillou), Rev. Zool., 1841, p. 294.

Loc. Aldabra, 1908—9 (Fryer). Assumption, 1910 (Dupont).

L'espèce se trouve depuis le Gaboon et le Cap de Bonne Espérance jusqu'en Asie et à l'Occident Indien.

31. *Anisoptera conocephala* (Linné), Syst. Nat., ed. xii., i. p. 696 (1767).

Loc. "Seychelles, Mahé (Long Island), 1908—9 ; Praslin, 1905 ; Coetivy, 1905. Spain, Africa."

Malgré ses élytres plus courts que les fémurs postérieurs et ses ailes qui ne dépassent presque pas les genoux des mêmes jambes, je considère ces exemplaires comme constituant une variété à organes du vol raccourcis, tout à fait comme dans *A. lugubris* Redt., car les genoux postérieurs sont concolorés et les cerci sont armés comme dans *conocephala* (*æthiopica* Thunb.) avec un tubercule très distinct près de la base de la dent interne. Comparés avec des exemplaires de provenances diverses, notamment avec ceux de Valence (Espagne), je ne trouve pas d'autres différences.

Gen. Phisis, Stål.

32. *Phisis visenda*, sp. nov.

Pallide flavescens. Oculi brunnei. Pronotum dorso lineis duabus sanguineis limbatum; lobis deflexis parallelis, elongatis, postice haud vel indistincte ampliatis. Elytra viridia, campo anali fascia longitudinali flava atque margine postico rufo. Alæ hyalinæ, antice virescentes, speculo fusco-marginato. Prosternum bispinosum. Mesosternum tuberculo utrinque elevato, apice crasse rotundato, instructum. Metasternum haud tuberculatum, tantum lateribus obtuse productis. Femora antica intus extusque 5-spinosa; intermedia extus 4-, intus 1-spinosa; postica extus spinis 10 parvis, intus spinis minutis 6—8 armata. Tibiæ anticæ utrinque spinis 7 magnis, apicem versus decrescentibus, in ♂ fortioribus quam in ♀; intermediæ utrinque 6-spinosæ, superne inermes. Segmentum anale ♂ magnum, basi sulcatum, apice truncatum, medio excisum. Lamina supraanalis parva, trigona. Cerci recti apicem versus sursum curvati atque depressiusculi, basi ampliati et intus dente retrorsum directo armati. Lamina subgenitalis postice rotundata, inter stylos circulariter sinuata. Lamina subgenitalis ♀ transversa postice truncata. Ovipositor incurvus, apice acuminatus, basi subtus utrinque distincte angulato-ampliatus.

Long. corp. ♂ 18; pron. 4,5; elytr. 23; fem. ant. 9,5; post. 17 mill.

Long. corp. ♀ 22; pron. 5,5; elytr. 28; fem. ant. 10,5; post. 20; ovip. 13 mill.

Loc. "Seychelles, 1908—9. Mahé: Cascade Estate, about 800 ft.; near Morne Blanc, about 800 ft.; Morne Seychellois, over 1500 ft. Silhouette: Mare aux Cochons, about 1000 ft."

Espèce plus prochaine de *pectinatus*, espèce océanique, que de *dumosa* qui habite l'Afrique. Elle diffère beaucoup de *spinifera* de l'île Rodriguez. C'est une espèce très remarquable par la coloration dont on peut juger suffisamment par un des exemplaires qui est très bien conservé.

Gen. Gryllacris, Serville.

33. *Gryllacris sechellensis* Bolivar, Ann. Soc. Ent. France, lxiv. p. 379 (1895).

Loc. Seychelles. "Mahé: from forest above Cascade Estate, from near Morne Blanc, &c. 1905 and 1908—9. Silhouette: mountain-forest, 1908. Praslin, 1905."

34. *Gryllacris fryeri*, sp. nov.

Colore griseo-testaceo. Statura parva. Caput pallidum. Fastigium verticis articulo primo antennarum haud vel vix latius, marginibus antice parallelis superne utrinque subsinuatis. Pronotum antice supra caput leviter rotundato-productum, sulcis expressis profundis, margine postico truncato; lobis lateralibus postice valde altioribus quam antice, margine postico valde sinuato, perpendiculari, margine inferiore obliquo, supra coxas obtuse angulato. Elytra apicem oviscapti superantia, venis venulisque concoloribus. Alæ dilute succineæ, venis fuscioribus, magnæ, triangulares, elytris longiores. Pedes unicolores, pilosi et fulvo-tomentosi. Femora antica intus, intermedia et postica in latere externo, striga ferruginea plus minusve distincta. Tibiæ anticæ spinis pallidis sat longis, decrescentibus. Femora postica spinis brevibus sed fortibus, apice nigro, 6—7

utrinque armata. Tibiæ posticæ levissime incurvæ, spinis minutis apice castaneo intus extusque in latere superiore armatæ. Tarsi pallidi. Ovipositor angustus, linearis, incurvus, pallide castaneus, margine inferiore pallidiore. ♀.

Long. corp. ♀ 19 ; pron. 3 ; elytr. 26,5 ; fem. post. 11 ; ovipos. 10 mill.

Loc. Aldabra, 1908—9 (Fryer).

Cette espèce appartient au groupe GG du Prospectus du Dr Griffini (1910, Zool. Anzeiger, Band xxxv. No. 16, p. 509) et elle se distingue bien par sa tête toute pâle.

Je remercie bien le Dr. Achille Griffini, le savant connaisseur des Gryllacrididæ, de m'avoir renseigné sur la validité de cette espèce avec sa bienveillance accoutumée.

Fam. **Gryllidæ.**

Gen. Curtilla, Oken.

Gryllotalpa, Latreille.

35. *Curtilla africana* (Pal. de Beauv.), Ins. Afr. Amér., p. 229, pl. 2 *c*, f. 6 (1805).

Loc. "Chagos Islands: Egmont and Peros Banhos, 1905. Aldabra: Takamaka, 1907. Seychelles: Mahé, 1905 and 1908—9. Africa, Asia, etc."

J'ai signalé cette espèce de la Digue d'où j'en ai vu un exemplaire tout petit provenant des chasses de M. Alluaud.

Gen. Scottia, gen. nov. (Pl. **13**, figs. 10, 11).

Corpus apterum, pilosum, setis singulis sparsis. Caput breve. Vertex deflexus. Frons inter antennas producta parum compressa, articulo primo antennarum subæque lata. Antennæ longæ, corpore duplo longiores. Oculi elongati subtriangulares. Ocelli pallidi in trigonum dispositi, laterales parum perspicui ab oculis distantes. Clypeus convexus. Palpi articulo ultimo infundibuliformi, penultimo longiore. Pronotum subcylindricum, superne depressiusculum, linea media longitudinali plus minusve impressa; lobis deflexis elongatis, antice altioribus. Elytra alæque nullæ. Tibiæ anticæ in latere postico foramine aperto vel nullo, calcaribus brevibus. Tarsi antici tibiis parum breviores, articulo primo longissimo. Tibiæ posticæ cylindricæ apicem versus leviter ampliatæ et crassiores, haud serrulatæ, in parte dimidia apicali spinis longis intus 2 vel 3, extus 3, mobilibus armatæ; calcaribus internis binis primis validis, primo longiore. Tarsi postici, articulo primo superne cylindrico, inermi, articulo secundo compresso, cylindrico. Cerci longi, pilosi. Ovipositor rectus, femoribus posticis haud longior.

Ce genre appartient à la tribu des Nemobites par la disposition des jambes postérieures, cependant il a la facies des *Gryllomorpha*. Le ♂ de *S. chagosensis* est peut être ailé puisque la ♀ porte des tympanes tibiales, mais la ♀ est tout à fait aptère de même que le ♂ et la ♀ de la deuxième espèce. Dans les deux espèces tout le corps est couvert d'une villosité grisâtre et orné de longs poils noirs épars et rares ; les jambes sont couvertes de petits poils noirs couchés, plus longs sur les éperons.

Je dédie ce genre si intéressant au savant conservateur des collections zoologiques du Musée de Cambridge qui l'a découvert, ayant puissamment contribué à la connaissance de la faune des Seychelles.

36. *Scottia chagosensis*, sp. nov. (Pl. **13**, fig. 10).

Statura parva. Corpus pallide testaceum griseo-villosum, pilis nigris obsitum. Oculi fusci. Caput inter oculos pilis nigris subseriatis ornatum. Pronotum antice posticeque pilis fimbriatum, postice haud constrictum. Pedes pallidi, pilis raris, nigris, longis, sparsis. Tibiæ posticæ extus 3, intus 2 spinis mobilibus armatæ. Tarsi postici articulo primo duobus sequentibus simul sumptis valde longiore. Cerci longe pilosi. Ovipositor subrectus, leviter sursum directus. Lamina subgenitalis medio sinuata. Segmentum ultimum abdominis truncatum, angulis haud productis. Lamina supraanalis trigona, parva.

Long. corp. ♀ 7 ; pron. 1,5 ; fem. post. 4,5 mill.

Loc. Chagos Islands: Salomon Atoll, Boddam, 24. V. 1905.

37. *Scottia salticiformis*, sp. nov. (Pl. **13**, fig. 11).

Statura pusilla. Colore pallide brunneo, fusco-vario. Nigro-villosa atque longe setosa. Antennæ nigræ. Pronotum postice constrictum fusco-variegatum, lateribus longe nigro-setosis. Pedes fusco-annulati. Tibiæ anticæ tympano nullo. Tarsi antici articulo primo cæteris junctis longiore. Tibiæ posticæ distincte incurvæ, tarsis haud vel vix longiores, supra utrinque spinis tribus mobilibus. Metatarsus posticus articulis duobus apicalibus simul sumptis distincte longior; articulus apicalis niger, unguiculis pallidis. Ovipositor castaneus, femoribus brevior.

Long. corp. ♂♀ 4,5 ; pron. 1 ; fem. post. 3,2 ; ovip. 2,8 mill.

Loc. "Seychelles. From the high forests. Mahé: summit of Morne Pilot, over 2000 ft.; between Trois Frères and Morne Seychellois, 1500—2000 ft.; Mare aux Cochons district; Cascade Estate. Silhouette: highest forest, sometimes over 2000 ft."

Jolie espèce ressemblant au premier abord une araignée du g. *Salticus* par son corps trapu &c.

Gen. Acheta, Linné.

38. *Acheta bimaculata* (De Geer), Mém. Ins., iii. p. 521, pl. 43, f. 4 (1773).

Liogryllus bimaculatus Saussure, Mém. Soc. Genève, xxv. p. 139 (1877).

Loc. "Seychelles: from the lower, cleared country; Mahé, Silhouette, Praslin, Bird Island. Assumption, 1910 (Dupont). ? Cosmoledo, 1907 (Thomasset). ? Amirantes, Poivre, 1905. Cargados Carajos, 1905: many labelled Establishment Island. The Cargados specimens all with one exception belong to the form with pale elytra: those from the other islands are all of the ordinary form."

J'ai vu un exemplaire typique et une variété à élytres pâles et à pronotum finement ourlé de rougeâtre. J'en avais déjà signalé l'espèce de Mahé, provenant des chasses de M. Alluaud. C'est l'espèce commune en Afrique et dans une partie de l'Asie, elle s'étend jusqu'aux îles Philippines.

Gen. Ornebius, Guérin.

39. *Ornebius validus* (Bolivar).

Liphoplus validus Bolivar, Ann. Soc. Ent. France, vol. lxiv. p. 382 (1895).

Loc. Chagos Islands : Salomon Atoll et Peros Banhos, 1905. Seychelles : Praslin, 1905.

J'avais décrit cette espèce par des exemplaires ♀ provenant de Mahé qui ne me semblent pas différer de ceux des îles Chagos ; ces derniers me permettent de modifier quelque peu la diagnose parce qu'ils sont mieux conservés.

La tuméfaction frontale est ornée d'une ligne rousse anguleuse de chaque côté, et n'a pas de sillon médian, qui n'est représenté que par une ligne très fine et à peine visible ; la lame suranale est brunâtre au milieu et entière, et l'oviscapte peut être tout à fait droit. Les cerques dépassent 15 mill.

40. *Ornebius syrticus*, sp. nov.

Colore pallide testaceo. Corpore cinereo-squamoso. Faciei tumor valde productus, articulo primo antennarum distincte latior, linea media impressa parum distincta. Antennæ unicolores, pallidæ, griseo-villosæ. Palpi concolores. Pronotum deplanatum, retrorsum sensim ampliatum, postice subrotundato-productum, margine postico griseo-squamoso. Elytra pronoto subbreviora, succinea, usque ad medium abdominis producta, postice ferrugineo-limbata, venis sat distinctis, speculo magno, subtrigono, antice rotundato, campo marginali fascia lata sanguinea. Pedes pilis rufis raris sparsis. Tibiæ anticæ tympano minuto rotundato in margine antico munitæ. Tibiæ posticæ supra deplanatæ utrinque minute serrulatæ. Metatarsus posticus serrulatus. Abdomen nigrum, griseo-squamosum.

♀ Pronotum antice posticeque subtruncatum. Elytra nulla. Ovipositor rectus vel subdecurvus, castaneus.

Long. corp. ♂ 7 ; pron. 2,2 ; elytr. 2 ; fem. post. 4 ; tib. post. 2,8 mill.

Long. corp. ♀ 8 ; pron. 1,8 ; elytr. 0 ; fem. post. 4,5 ; tib. post. 3 mill.

Loc. Farquhar Atoll, 1905. Aldabra, 1908—9 (Fryer). Seychelles : Dennis Island, 1908.

Il est de la taille du *O. novaræ* Sauss. dont il est aussi très voisin, mais le sillon rostral est à peine imprimé, le corps est peu pubescent et couvert d'écailles, notamment le long du bord postérieur du pronotum et sur l'abdomen. Les élytres s'étendent jusqu'au milieu de l'abdomen ayant leur bord postérieur rougeâtre et les veines très distinctes ; la surface du miroir est rugueuse. Les pattes sont plus courtes que dans l'espèce de l'Océan Pacifique. Les autres espèces de *Ornebius* diffèrent par la coloration ou par la forme du pronotum et le développement des élytres, de sorte qu'on ne peut pas les confondre. Le pronotum est beaucoup plus large postérieurement ainsi que les élytres que dans *O. flavipalpis* Kirby de Christmas Island, et l'oviscapte est plus court que dans cette espèce.

41. *Ornebius elegantulus*, sp. nov. (Pl. **13**, fig. 12).

Colore rufo-testaceo. Corpus squamulosum, et pilosum. Faciei tumor valde productus, articulo primo antennarum subangustior, linea impressa plerumque parum distincta.

Antennæ remotæ et anguste fusco-annulatæ. Pronotum in ♂ deplanatum postice rotundato-productum, rufescens, margine postico squamulis pallidis fimbriatum. ♂ Elytra pallide testacea, postice fascia lata fusca terminata, pronoto longitudine subæquantia, speculo trigono antrorsum angustato antice rotundato, strigoso, venis obliquis duabus; campo laterali fusco-nigro extus pallide limbato. Pronotum in ♀ retrorsum parum ampliatum, longius quam latius, postice subtruncatum. ♀ Elytra nulla. Pedes utriusque sexus pallidi. Tibiæ posticæ supra deplanatæ, canthis serrulatis. Abdomen rufescens. Cerci longi. Ovipositor femoribus posticis brevior.

Long. corp. ♂ 10; pron. 3,2; elytr. 2,2; fem. post. 6 mill.

Long. corp. ♀ 11; pron. 2; elytr. 2,2; fem. post. 6; ovip. 5 mill.

Loc. "Seychelles. Most of the specimens were beaten from trees in the mountain-forests of Silhouette, VIII.—IX. 1908 (near Mt Pot-à-eau, about 1500 ft., and Mare aux Cochons, 1000 ft.). Mahé: Cascade Estate, I. 1909; Long Island, VII. 1908."

Plus grand que *O. syrticus*, roussâtre avec la bande postérieure des élytres grande et noire, l'abdomen roussâtre et la protubérance faciale à peine aussi large que le premier article des antennes.

42. *Ornebius succineus*, sp. nov.

Colore pallide testaceo. Griseo-villosus atque squamulosus. Faciei tumor valde productus, articulo primo antennarum subæqualis, utrinque linea rufa interrupta ornatus, linea media tenuiter impressa. Antennæ corpore concolores, remote et anguste fusco-annulatæ. Palpi maxillares apice nigri. Pronotum ♂ retrorsum leviter ampliatum, depressiusculum, postice parum productum, rotundatum, squamulis fimbriatum, haud pictum. Elytra apicem pronoti parum superantia, succinea, postice anguste fusco-marginata, campo laterali pallido. Pedes pallidi, articulo secundo tarsorum fusco. Tibiæ posticæ superne deplanatæ, canthis serrulatis. Abdomen rufescens, griseo-squamosus.

Long. corp. ♂ 11; pron. 2,8; elytr. 1,2; fem. post. 6,5 mill.

Loc. "Seychelles. Silhouette: lower country, IX. 1908. Mahé: Anonyme Island, I. 1909."

Espèce voisine de *O. nigripalpis* Guér. mais à taille plus grande, avec les élytres moins développées n'arrivant pas à la moitié de la longueur du pronotum; celui-ci est en même temps moins développé et unicolore. L'abdomen est de la couleur du reste du corps. Du *O. xanthopterus* Guér. diffère aussi par un plus faible développement des élytres et par la couleur des jambes et de l'abdomen, des antennes et des palpes.

Cette espèce ressemble beaucoup par sa coloration à *O. validus* Bol. à tel point qu'on pourrait croire qu'elle en est la ♀, mais les palpes dans *O. validus* sont pâles dans toute leur longueur.

Gen. Ectatoderus, Guérin.

43. *Ectatoderus nigriceps*, sp. nov.

Castaneus, griseo-squamosus. Faciei tumor magnus, transversus, a capite linea levi divisus; linea media longitudinali distincta. Antennæ articulo basali parvo, quam tumore faciali quinta parte minore. Pronotum antice suaviter sinuatum, postice supra

thoracem extensum, rotundatum ; lobis lateralibus nigro-pictis. Elytra sub pronoto abscondita, nigro-maculata. Pedes breves, pallide grisei, brunneo-marmorati. Tibiæ posticæ superne deplanatæ, canthis serrulatis ; metatarsus posticus magnus, superne utrinque serrulatus, dimidio tibiarum longior : articuli 2, 3que tarsorum posticorum minuti. Abdomen griseum ; cerci crassi, longe pilosi, castanei. ♂.

Long. corp. ♂ 5,5 ; pron. 2,5 ; fem. post. 3 mill.

Loc. Aldabra, 1908—9 (Fryer).

Semblable au *E. pallidigeniculatus* Brunn. plutôt qu'au *vœltzkowi* Sauss. de Nossi-Bé par la taille, la coloration et la forme du pronotum, ayant de même les élytres cachés sous le pronotum ; c'est par ce caractère qu'il diffère des autres espèces.

44. *Ectatoderus squamiger*, sp. nov.

Major, griseo-subargenteo-squamosus. Caput castaneum, squamis obtectum, antice nigro- et carneo-varium, antrorsum sensim angustatum. Faciei tumor magnus, transversus, articulo basali antennarum duplo latior, a capite linea tenui divisus, sulco longitudinali distincto. Antennæ brunneæ, articulo primo nigro. Pronotum longius quam latius, antrorsum angustatum, postice truncatum ; lobis deflexis vitta longitudinali nigra pone oculos oriunda. Pedes pilis fuscis sparsis, griseo-squamosi, fusco-variegati. Femora postica extus pallida, superne fusco-strigata. Tibiæ posticæ fere rectæ. Metatarsus posticus dimidio tibiarum distincte brevior. Cerci longi, castanei apicem versus fusci. Ovipositor rectus. ♀.

Long. corp. ♀ 9 ; pron. 3,2 ; fem. post. 6,5 ; ovip. 5,5 mill.

Loc. Aldabra, 1908—9 (Fryer).

Beaucoup plus grand que l'antérieur, à tête brune bordée de noir, de même que le pronotum qui offre de chaque côté, le long du bord supérieur des lobes latéraux, une bande noire ; les jambes postérieures de couleur pâle avec des lignes longitudinales parallèles le long du bord supérieur de la face externe.

Je ne pense pas qu'elle puisse être la ♀ de l'espèce précédente par les différences signalées, par la forme de la tête dont le *tumor facialis* est moins fortement transverse et la ligne divisoire longitudinale très visible.

Gen. Pentacentrus, Saussure.

45. *Pentacentrus nigrifrons*, sp. nov. (Pl. **13**, figs. 13—15).

Gracilis, dilute griseo-testaceus, griseo-villosus atque pilis nigris sparsis. Ocelli griseo-testacei. Palpi pallidi, articulo ultimo trigono apice valde oblique truncato. Antennæ, articulis duobus primis fusco-nigris exceptis, griseo-testaceæ. Pronotum dorso planiusculum subtransversum antrorsum angustatum, antice truncatum postice obtusissime angulatum vel subarcuatum, pilis rufescentibus fimbriatum ; lobis lateralibus valde elongatis, fuscioribus, margine inferiore horizontali. Elytra abdomen totum tegentia, angusta : in ♂ dispositionis venarum forma insolita, in parte tertia antica vena transversa valde impressa campum analem a campo discoidali dividente, venis obliquis nullis ; parte dimidia postica extus ad venam mediam areola polygonia magna, denique venis tribus irregularibus longitudinalibus versus

apicem elytri excurrentibus; speculo nullo; campo laterali venis quattuor longitudinalibus subparallelis; spatio inter venam medianam et venam humeralem lato, per venas spurias diviso: in ♀ in longitudine elevato-quadrivenosa, venis transversis parum distinctis. Alæ longe caudatæ, transverse fusco-strigatæ. Pedes breves. Tibiæ anticæ utrinque tympano instructæ; tibiæ intermediæ usque ad apicem distincte incrassatæ. Femora postica elongato-ovata, parte filiformi apicali nulla. Tibiæ posticæ compressæ superne planatæ, marginibus denticulatis, spinis utrinque tribus in parte tertia apicali insertis, spina apicali interna a calcaribus distante; calcaribus internis tantum duobus subæque longis; calcaribus externis tribus, brevioribus, sed intermedio longiore. Metatarsus posticus compressus, superne in utroque margine denticulatus, spina apicali interna magna; articulus secundus tarsorum crassiusculus. Cerci filiformes, longissimi. Ovipositor rectus, gracilis, apice acutus.

Long. corp. ♂ 11; pron. 1,5; elytr. 9,2; fem. post. 6,5; cerc. 17 mill.

Long. corp. ♀ 12; pron. 1,8; elytr. 10; fem. post. 7,5; ovipos. 6 mill.

Loc. "Seychelles, 1908—9. Only from the mountain-forests. Mahé: above Cascade; near Morne Blanc; between Trois Frères and Morne Seychellois, 1500—2000 ft. Silhouette."

La coloration uniformément d'un gris jaunâtre et la taille plus grande, distinguent cette espèce au premier abord de *P. pulchellus* Sauss., mais il y a bien d'autres différences, telles que la couleur noire de la tête (fig. 13) qui n'est jaunâtre qu'en arrière des ocelles; la coloration pâle du dernier article des palpes maxillaires qui est en même temps très large à son extrémité par suite d'être très obliquement tronqué, en sorte que l'un des côtés est de moitié plus long que l'autre et aussi long que la partie tronquée; l'oviscapte droit et notamment la longueur extraordinaire des cerques (fig. 15) qui sont plus d'une fois et demie aussi longs que le corps. Les mâles des *Pentacentrus* n'étant pas connus il est nécessaire d'exposer les différences qu'ils offrent avec la plupart des insectes de cette tribu. Leur tambour n'est pas développé, mais il y a cependant une différence assez grande entre l'élytre des ♂ (fig. 14) et celui des ♀. Ces dernières se comportent comme dans *pulchellus*; quant aux mâles ils offrent une division dans une partie basale et une autre apicale établie par une veine transversale droite et assez enfoncée; la partie apicale étant du double plus longue que la basilaire. Cette veine divisoire pourrait être la veine anale qui serait parallèle à la veine discoidale depuis la base de l'élytre, puis s'écartant brusquement en angle droit pour arriver au nœud musical; dans cette partie basilaire on distingue deux veines axillaires parallèles longitudinales, dont l'interne brisée en angle obtus arrive aussi au nœud musical, l'externe se reliant à la veine anale par un petit trait oblique; dans la partie apicale on distingue deux cordes près du bord postérieur de l'élytre mais presque droites et suivant une direction parfois parallèle à ce bord, se prolongeant jusqu'à l'apex de l'élytre; une troisième veine partant aussi du nœud mais divergeant des antérieures (veine diagonale), se terminant au milieu de l'élytre en se divisant en deux branches qui divergent en angle droit, dont l'une se joint à la première corde et l'autre se continue en se brisant en angle obtus jusqu'à la veine discoidale; en avant de celle-ci l'on voit une grande aréole polygonale limitée en avant par une veine brisée en angle obtus, et du côté extérieur par une veine

assez forte, un peu sinueuse, qui part de la base et que je crois être une deuxième veine discoidale ; cette veine s'interrompt en ce lieu ; le reste de la partie apicale est simplement parcouru par une veine longitudinale qui se continue jusqu'à l'apex de l'élytre, formant une aire allongée avec la première corde, qui va se rétrécissant vers l'extrémité et qui est divisée par une veine qui se rélie à la première corde vers le tiers postérieur de l'élytre. Le champ latéral est limité en haut par une veine discoidale qui forme avec l'humérale une large bande parcourue depuis la base jusqu'au milieu par une veine médiane qui se perd vers le tiers postérieur de l'élytre ; il y en a en outre quatre veines axillaires parallèles ou divergentes vers l'extrémité avec la veine humérale et dont la première arrive à la base mais presque unie à cette veine. Les ailes sont hyalines mais elles ont une bande discoidale opaque et ornée de lignes brunâtres vers l'extrémité ; c'est cette partie qui dans le repos couvre le reste.

Le genre *Pentacentrus* n'est connu que de Ceylan, car *P. tenellus* Karsch de Cameroon a été séparé de ce genre par la présence de cinq épines sur le côté extérieur des dernières jambes, et forme maintenant le genre *Pentacentrodes* Bol. dont les mâles ont les élytres exactement conformés comme ceux des femelles. La trouvaille qu'a fait le Professeur Gardiner d'un genre nettement indien aux Seychelles est donc intéressante en même temps qu'elle nous permet de connaître la conformation spéciale des élytres dans les mâles des *Pentacentrus*. Un autre genre prochain serait, d'après Mr Kirby, le genre *Salmania* Walk., mais il est difficile de juger des relations de ce genre par la description qu'en donne Walker.

Gen. Gryllapterus, gen. nov. (Pl. **14**, fig. 16).

Corpus depressiusculum. Caput a supero visum transversum, antice fortiter declive, infra oculos valde obliquum, breve. Frontis rostrum basi lateribus haud sinuatum, antrorsum sensim angustatum, articulo primo antennarum haud latius. Ocelli in trigonum subæquilaterale dispositi, omnes a supero discreti, ocello antico ab apice rostri distante. Oculi ovales oblique positi. Palpi breves, articulo apicali articulo penultimo parum sed distincte longiore, apicem versus ampliato, apice oblique truncato. Pronotum transversum, antice posticeque truncatum, canthis rotundatis ; lobis deflexis medio subinflatis, trapezoidalibus, margine inferiore parum obliquo, retrorsum ascendente, antice rectangulatis. Elytra alæque nullæ. Pedes breves compressiusculi. Femora postica valida apicem versus sensim attenuata, parte apicali filiformi subnulla. Tibiæ anticæ tympano nullo ; intermediæ spinis apicalibus 3 ; posticæ haud curvatæ apicem versus robustiores, superne haud sulcatæ, basi præcipue in margine externo minute spinosæ, in utroque margine spinis 4 magnis instructæ, canthis inter spinas, cantho externo inter spinas primas excepto, inermibus ; apice calcaribus intus 3, extus 3 armatæ : in latere interno calcaribus duobus superioribus maximis ; in latere externo calcare intermedio longiore. Metatarsus elongatus, metatarsus posticus superne extus denticulatus, intus tantum spina apicali armatus. Articulus secundus tarsorum minutus, compressus. Ovipositor rectus, valvulæ apice acuto haud denticulatæ. Cerci longi, pilosi.

Ce genre a des rapports avec *Gryllomorphus*, mais je crois devoir le placer à côté du g. *Landrevus* Walk. dans la tribu des Œcanthiens, parce que les jambes postérieures ont

leurs bords et notamment le bord externe denticulés, non seulement à la base, mais aussi entre les deux premières épines.

La forme de la tête est bien différente de celle des Œcanthiens, car en examinant l'insecte du côté supérieur, elle apparaît tout à fait transverse; en la voyant de côté on s'apercoit que le front descend obliquement jusqu'à la partie proéminente du rostre, changeant dans cet endroit de direction et devenant oblique jusqu'au labre; le rostre se forme d'une manière insensible, n'étant pas émarginé de chaque côté à la base, ni sillonné transversalement du côté supérieur. Les ocelles tous placés dans le plan supérieur sont disposés en triangle presque équilatéral, et les postérieurs sont assez éloignés des yeux, leur distance jusqu'au bord de l'orbite est un peu moindre que celle qui les sépare de la ligne médiane du front. Le pronotum est tout à fait transverse et les côtés apparaissent fort convexes par suite d'une élévation ou gibbosité peu saillante des lobes latéraux.

MARINE BIOLOGICAL LABORATORY WOODS HOLE MASS.

46. *Gryllapterus tomentosus*, sp. nov. (Pl. **14**, fig. 16).

Fuscus vel fusco-niger; fusco-tomentosus atque pilosus. Caput testaceo-ferrugineum fusco-varium. Antennæ basi ferrugineæ. Pronotum disco nec non lobis lateralibus fuscis, canthis tantum testaceis. Pedes obscure ferruginei, fusco-variegati. Tibiæ fusco-annulatæ. Calcar superum internum tibiarum posticarum intermedio sublongius, calcar intermedium griseo-villosum. Abdomen superne fusco-nigrum. ♀.

Long. corp. ♀, 9; pron. 2; fem. post. 7; tib. post. 5,5; ovip. 6,2 mill.

Loc. "Seychelles. Silhouette: near Mt. Pot-à-eau, about 1500 ft., VIII. 1908."

Gen. Phæogryllus, gen. nov. (Pl. **14**, fig. 17).

Corpus crassum, apterum. Caput parvum. Frontis rostrum productum, articulo primo antennarum subangustius, ocello antico in ejus apice antrorsum exserto; ocelli postici basi rostri siti, inter se minus quam ab ocello antico distantes. Antennæ graciles. Palpi articulis elongatis linearibus, articulo apicali prope apicem dilatato, propter hoc extus sinuato. Pronotum transversum antrorsum angustatum, dorso planiusculo, antice posticeque truncato; lobi deflexi obliqui, angulo antico late rotundato, margine infero retrorsum ascendente. Mesonotum pone marginem posticum pronoti utrinque ad locum alarum incisura rimata instructum. Pedes breves compressi. Femora postica basi latissima apicem versus sensim angustata, parte apicali filiformi subnulla. Tibiæ anticæ intus extusque tympano minuto instructæ, apice calcaribus duobus armatæ. Tibiæ posticæ compressæ, superne sulcatæ, marginibus basi et in latere interno, inter spinas ultimas excepto, serratis, utrinque spinis 4 apice uncinatis, in latere interno spina ultima in apice tibiarum sita; calcaribus 6, intus 3, extus 3, duobus superioribus internis multo longioribus; in latere interno calcare intermedio distincte longiore. Metatarsus posticus superne in latere externo tantum spinosus; articulus secundus tarsorum posticorum compressus; metatarsus posticus articulis duobus ultimis tarsorum simul sumptis sesqui longior. Cerci longi et longe pilosi. Ovipositor linearis, angustissimus, apice acuto, haud dentato.

Dans le Système de Saussure ce genre se range parmi les Œcanthiens Phalangopsites et doit se placer à côté des *Paragryllus* par ses fémurs postérieurs non amincis à

l'extrémité et ses jambes antérieures pourvues de tympans des deux côtés. Malgré cela, l'aspect de cet insecte est tout à fait celui d'un *Phalangopsis* à pattes très courtes.

47. *Phœogryllus fuscus*, sp. nov. (Pl. **14**, fig. 17).

Fuscus, griseo-tomentosus. Antennæ ferrugineo-testaceæ, articulo primo lato, castaneo. Tibiæ posticæ calcare supero interno intermedio longiore. ♀.

Long. corp. ♀ 18 ; pron. 4,5 ; fem. post. 15 ; tib. post. 13,5 ; tars. post. 4 ; ovipos. 15 mill.

Loc. "Seychelles. Silhouette, VIII. 1908 : Mahé, Cascade Estate, II. 1909."

Gen. Seychellesia, gen. nov. (Pl. **14**, figs. 18—20).

Corpus depressiusculum. Caput transversum ab antico posticoque compressum. Oculi exserti perpendiculariter positi, inferne elongati et angustati. Frontis rostrum inter antennas productum, angustum, articulo primo antennarum haud latius ; ocello antico in ejus apice a supero distincto, ocellis posticis inter se parum distantibus, ab ocello anteriore magis distantibus. Antennæ graciles, fragiles. Palpi breves, articulo apicali articulo penultimo parum longiore, prope apicem ampliato, propter hoc margine antico sinuato. Pronotum leviter transversum, depressiusculum, disco inæquali antice posticeque truncato, canthis ante medium transverse impressis ; lobis deflexis verticaliter insertis sed canthis rotundatis, triangularibus, angulo antico obtusato, margine inferiore retrorsum oblique ascendente. Elytra subcornea, abbreviata, intus basi tangentia deinde dehiscentia. Alæ nullæ. Pedes modice elongati, compressi. Femora postica apicem versus angustata, subfiliformia. Tibiæ anticæ intus tympano (excepta *S. longicercata*) instructæ. Metatarsus anticus elongatus, articulis binis ultimis simul sumptis longior. Tibiæ posticæ superne sulcatæ, marginibus fere a basi denticulato-spinosis, in dimidio postico intus extusque spinis quattuor, cantho interno inter ultimas spinas haud serrato, spina ultima interna in apice sita, externa ab apice remota : calcaribus duobus superioribus internis elongatis, dimidium metatarsi attingentibus, superiore sublongiore ; calcaribus externis minoribus, intermedio magis elongato. Metatarsus posticus superne in margine externo tantum spinosus, spinis apicalibus longis sed spina interna longiore. Articulus secundus tarsorum compressus. Cerci longi, pilosi. Ovipositor rectus, apice acutus, haud denticulatus.

Prochain de *Phalangacris* mais à palpes de moitié plus courts et ayant le dernier article fortement dilaté à l'extrémité, le pronotum déprimé en dessus. Les élytres déhiscents en arrière avec des nervures en général droites et à champ latéral bien développé ; dans *Phalangacris* ce champ est rudimentaire. Les pattes plus courtes et à métatarse bien plus court ; celui-ci étant dans le genre cité le double des deux articles apicaux reunis.

48. *Seychellesia nitidula*, sp. nov. (Pl. **14**, fig. 18).

Brunnea, nitidula. Caput flavo-ornatum, ab antico compressum, inter oculos et rostrum valde excavatum, ocellis posticis inter se dimidio magis appropinquatis quam ab ocello antico distantibus. Rostrum angustum, marginibus anguste flavis. Frons antice linea flava, antrorsum ampliata. Palpi fusci, articulo ultimo articulo penultimo sesqui longiore,

apicem versus ampliato et margine antico sinuato. Antennæ fuscæ? articulo primo transverse flavo-fasciato. Oculi exserti, brunnei. Pronotum transversum, antice posticeque truncatum, anguste marginatum, disco medio inæquali, impresso, flavo-picto, dimidio antico castaneo, dimidio postico nigro, lineis 4 flavis antice abbreviatis; lobis deflexis margine antice incrassato flavo, angulo antico subacuto, margine infero antice anguste rufo, postice subreflexo. Elytra subcornea flavo-varia, venis crassis elevatis longitudinalibus, in campo dorsali venis magis distantibus et vena media subflexuosa postice curvata; campo marginali venis axillaribus duabus valde curvatis atque inter se distantibus, apicem versus approximatis. Alæ nullæ. Pedes flavo- et fusco-annulati. Tibiæ anticæ in latere interno tympano ovali subrotundato parvo instructae: metatarsus elongatus, dimidiam longitudinem tibiarum distincte superans. Pedes postici breves. Femora basi valde incrassata. Cerci corpore longiores, longe griseo-pilosi. Ovipositor cercis brevior, apice acuto non denticulato. ♀.

Long. corp. ♀ 11; pron. 2; elytr. 4,5; cerc. 12; ovip. 7,5 mill.

Loc. "Seychelles. Silhouette: from near Mare aux Cochons, over 1000 ft., IX. 1908."

49. *Seychellesia patellifera*, sp. nov. (Pl. **14**, figs. 19, 20).

Pallide grisea, fusco-marmorata. Caput pallide variegatum, rostro a supero viso articulo primo antennarum angustiore. Pronotum antice obtusissime sinuatum, postice truncatum, subgibbulosum, fuscum, linea media nec non maculis discalibus, marginibusque, præcipue margine postica, griseo-flavescentibus; lobis deflexis fuscis, angulo antico inferiore maculisque una vel duabus mediis griseis. Elytra brevissima, squamulas simulantia, pronoto fere dimidio breviora, extus fusca, rotundata, indistincte venosa. Pedes fusco-annulati. Femora postica superne fusco-fasciata atque oblique fusco-strigata. Tibiæ anticæ tympano nullo. Cerci longissimi. ♂.

Long. corp. ♂ 12; pron. 2,2; elytr. 1; fem. post. 12; cerc. 19 mill.

Loc. "Seychelles. Silhouette, forest near Mt. Pot-à-eau, 1500 ft., VIII. 1908. Mahé: Morne Seychellois, 1905; Cascade Estate, 800 ft. or over, 1908—9."

50. *Seychellesia longicercata*, sp. nov.

Fusco-brunnea. Caput brunneum superne rufo-varium, rostro, vitta postoculari nec non lineis duabus occipitalibus pallide rufis; scrobis antennalibus parvis, rostro a supero viso articulo primo antennarum haud vel vix latiore. Palpi fusci. Antennæ longissimæ, pallide rufæ, parum distincte brunneo-annulatæ. Pronotum transversum antice posticeque truncatum, medio linea impressa, marginibus disci vitta pallida medio ampliata; lobis deflexis concaviusculis, angulo antico inferiore rufo. Elytra pronoto vix longiora, cornea, intus basi tangentia, dehiscentia, venis longitudinalibus subparallelis elevatis, venis transversis raris parum expressis, lateribus vitta pallide flava; campo marginali venis axillaribus duabus antice curvatis. Alæ nullæ. Pedes rufescentes. Tibiæ fusco-annulatæ, anticæ tympano in latere interno instructæ; posticæ superne anguste fusco-strigatæ. Cerci longi et longe pilosi. Ovipositor rectus, tibiis posticis brevior.

Long. corp. ♂ 12 ; pron. 2,2 ; elytr. 2,8 ; fem. post. 11 mill.

Long. corp. ♀ 18 ; pron. 3,1 ; elytr. 3 ; fem. post. 14 ; ovip. 12 mill.

Loc. "Seychelles. Silhouette : from near Mt. Pot-à-eau, VIII. 1908. Mahé : Cascade Estate, over 800 ft. ; Mare aux Cochons district, about 1500 ft. or over."

Gen. Phalangacris, Bolivar.

51. *Phalangacris alluaudi* Bolivar, Ann. Soc. Ent. France, vol. lxiv. p. 381 (1895).

Loc. Seychelles : Mahé, 1908—9 ; Cascade Estate.

En décrivant ce genre j'ai signalé la présence d'un petit miroir à la base des jambes antérieures du côté intérieur ; mais dans les exemplaires que je viens d'examiner je ne distingue pas ce miroir ; ne se trouverait-il que dans les exemplaires adultes ? Tous ceux que j'ai vus de l'expédition de Professeur Gardiner sont jeunes. En examinant l'exemplaire que je posséde et qui provient des chasses de M. Alluaud je constate la présence du miroir sur l'une des jambes, mais il manque sur l'autre ; ce n'est pas un organe constant.

Gen. Œcanthus, Serville.

52. *Œcanthus parvulus* Saussure, Abhandl. Senckenb. Ges. xxi. p. 613 (1899).

Loc. "Farquhar Atoll, 1905 (Gardiner). Also known from Aldabra and Nossi Bé."

Espèce très prochaine de *Œ. indicus* Sauss. par la brièveté de l'oviscapte et par la taille.

Gen. Trigonidium, Rambur.

53. *Trigonidium perpusillum*, sp. nov.

Pallide flavescens, griseo-villosum. Caput postice superne maculis fuscis plerumque pictum, antice inter oculos fascia lata transversa nigro-nitida, pilis brunneis instructum. Palpi pallidi ; articulo ultimo elongato, apicem versus sensim ampliato, infundibuliformi. Antennæ concolores pone medium brunneæ, articulis primis basalibus nigris. Pronotum dorso subtransversum, pilis sparsis ; lobis deflexis ad dorsum fascia nigra percurrente. Elytra cornea, simul sumpta plus minusve ovata, campo dorsali fortiter 5-venoso, venis transversis indistinctis, apicem abdominis attingentia et apice extus sinuata. Alæ nullæ. Pedes concolores. Femora postica plerumque striga brunnea. Tibiæ posticæ spinis basi puncto fusco. Tarsi omnes articulo primo apice nec non articulo secundo fuscis. Abdomen pallidum. Ovipositor apicem versus subrufescens. Cerci apicem ovipositoris subattingentes, pallidi, longe griseo-pilosi.

Long. corp. ♂ ♀ 4,5 ; pron. 1 ; elytr. 2,8 ; fem. post. 4,8 ; ovip. 1,8 mill.

Variat pronoto unicolore pallido, vitta nigra loborum lateralium nulla.

Loc. "Seychelles, 1908—9. From the mountain-forests. Mahé : high forest near Morne Blanc ; forest above Cascade Estate, about 800 ft. and over ; slopes of Morne Seychellois, about 1500 ft. ; near Mt. Harrison, over 1500 ft. Silhouette : near Mt. Pot-à-eau, about 1500 ft. ; Mare aux Cochons."

L'espèce la plus prochaine de celle-ci est sans doute *T. erythrocephalum* Walk. (*Scleropterus erythrocephalus* Walk.) de Natal et de l'Afrique occidentale, mais elle se

distingue aisément par la coloration ; celle-ci varie dans l'espèce décrite et permet de distinguer trois variétés principales :

Var. *infuscatum*. Pronoto maxima parte ; femoribus posticis, basi annuloque ante-apicali pallidis exceptis ; nec non fascia lata transversa segmentorum abdominis, fuscis.—Mahé.

Var. *ruficeps*. Capite, macula nigra interantennali articulisque basalibus antennarum nigris exceptis, rufo-sanguineo ; pronoto abdomineque fusco-nigris ; femoribus posticis parte media late fuscis ; tibiis posticis fuscis.—Silhouette.

Var. *impicticolle*. Pronoto corpore concolore, nec nigro-vittato nec infuscato.—Silhouette.

54. *Trigonidium vittaticolle*, sp. nov.

Pallide rufescens, griseo-villosum. Caput superne rufo-4-lineatum. Antennæ longissimæ, pallide testaceæ, remote et subindistincte fusco-annulatæ. Palpi pallidi ; articulo ultimo apicem versus sensim et valde ampliato, infundibuliformi. Pronotum in ♂ subcylindricum, in ♀ subtransversum, marginibus fulvo-fimbriatis, lateribus pilis sparsis, dorso vittis rufis longitudinalibus plus minusve confusis, lobis deflexis ad dorsum vitta rufa. Elytra cornea, simul sumpta ovata, apicem abdominis subsuperantia, apice inter campum marginalem et dorsalem valde sinuata ; dorso 4—5-venoso, inter venas fusciore ; venis transversis pallidis, distinctis. Alæ explicatæ elytra parum superantes. Pedes pallidi, unicolores, tantum articulo primo apice nec non articulo secundo fuscis, in tarsis posticis articulo tertio fusco. Ovipositor apicem versus obscure rufus. Cerci longi et longe pilosi.

Long. corp. ♂♀ 7 ; pron. 1,1 ; elytr. 4,5 ; fem. post. 6,5 ; ovip. 2,5 mill.

Loc. "Seychelles, 1908—9. Mahé, from the mountain-forests : high forest behind Trois Frères ; Mare aux Cochons district ; Cascade Estate, &c. Silhouette : Mare aux Cochons."

Espèce voisine de l'antérieure mais plus grande et de coloration différente.

Gen. Zarceus, Bolivar.

55. *Zarceus fallaciosus* Bolivar, Ann. Soc. Ent. France, vol. lxiv. p. 384 (1895).

Cette espèce varie beaucoup par la taille et la coloration. Les exemplaires typiques sont verdâtres pendant la vie d'après les indications de Mr Hugh Scott ; ils ont des ailes longues, roussâtres le long du bord supérieur (antérieur), offrant de chaque côté, considérées au repos, une ligne noire interrompue. Mais on trouve les variations suivantes :

A. Coloration pâle, uniforme, les ailes longues mais dépourvues de bande noire interrompue.—Mahé, Silhouette.

B. Taille de beaucoup moindre, couleur uniforme, verdâtre pendant la vie et couleur de paille lorsqu'ils sont secs.—Mahé, Silhouette.

C. Taille plus grande, les ailes raccourcies arrivent à peine aux genoux postérieurs. Palpes noirâtres; le premier article des antennes peut être aussi maculé de brun ainsi que le dos du pronotum.—Mahé, Silhouette.

Loc. "Seychelles. Found among the foliage of trees and bushes at the coast, and at elevations extending up into the forests over 1000 ft.: the colour is a bright light green during life. Silhouette: coast and cultivated country, IX. 1908; Mare aux Cochons, about 1000 ft., on or near the plateau VIII—IX. 1908; near Mt. Pot-à-eau, over 1000 ft., VIII. 1908. Mahé: Long Island, VII. 1908; Anonyme Island, I. 1909; country near Morne Blanc between 500 and 1000 ft. 1908; Cascade Estate."

56. *Zarceus major*, sp. nov. (Pl. **14**, fig. 21).

Major, pallide flavescens; superne rufescens. Caput confuse rufo-fasciatum. Palpi apice valde ampliati. Antennæ remote sed distincte fusco-annulatæ. Pronotum disco rugoso-subcalloso, rufo-vario; callis duobus mediis fuscis. Elytra abdomen ex toto tegentia, superne rufescentia, venis longitudinalibus dorsalibus nec non venis transversis æque altis, exsertis, rufis. Tibiæ posticæ spinis apice nigris. Tarsi pallidi, articulis tantum apice angustissime fuscis. ♀.

Long. corp. ♀ 7,5; pron. 1,2; elytr. 5,8; fem. post. 5,5; ovip. 2,5 mill.

Loc. "Seychelles. Mahé and Praslin, 1905 (Gardiner). Mahé, 1908—9, only found in the highest and dampest forests, among the foliage of trees: summit of Morne Pilot, over 2000 ft.; between Trois Frères and Morne Seychellois; stunted forest of 'Capucin' (*Northea*) on summit of mountain above Anse Major, over 2000 ft. The lateral parts, legs, &c., which become yellow after death, are green during life."

Espèce qui diffère du *Z. fallaciosus* Bol. par sa taille plus grande et par les nervures du champ dorsal des élytres plus fortement saillantes, de couleur rousse; les veines transverses sont saillantes dans cette espèce, tandis que dans le *fallaciosus* elles sont très peu distinctes et beaucoup moins élevées que les veines longitudinales.

Gen. Heterotrypus, Saussure.

57. *Heterotrypus insularis*, sp. nov. (Pl. **14**, fig. 22).

Testaceus; sicce fusco-testaceus, griseo-villosus. Antennæ longissimæ pone medium fusco-annulatæ. Frons nitida, setis nigris magnis destituta. Rostrum antice impressum, articulo primo antennarum latius. Pronotum antrorsum valde angustatum, antice posticeque truncatum, setis brevibus marginatum, medio linea longitudinali impressa. Elytra femorum posticorum apicem haud attingentia, ampla, pone medium latiora, venis obliquis 7, tribus primis parvis, quattuor ultimis longis, sinuosis, parallelis; speculo transverso, antice rectangulo, venis duabus transversis, prima subrecta, secunda sinuata, diviso; campo apicali reticulato, campo laterali plurivenoso, venis perpendicularibus subparallelis, fere rectis. Alæ elytris breviores. Pedes fusco-annulati. Tibiæ anticæ graciles basin versus leviter crassiores, tympano intus extusque ovato aperto gerentes; posticæ graciles, spinis intus 4, extus quoque 4; marginibus basi serratis, sed inter spinas margine externo tantum serrato: calcare supero interno calcare intermedio valde longiore, apicem metatarsi tamen haud superante. Metatarsus supra in margine externo tantum 4-spinosus. ♂.

Long. corp. ♂ 15; pron. 2,5; elytr. 11,5; fem. post. 11,5; antennarum 85 mill.

Loc. "Seychelles, 1908—9. Beaten from bushes &c. in mountain-forests; seen but seldom, and very difficult to capture owing to the extreme swiftness with which it runs. Silhouette: Mare aux Cochons. Mahé: near Morne Blanc, and Cascade Estate."

L'un des exemplaires de Silhouette est d'une couleur roussâtre, avec le bord postérieur du pronotum plus obscur. L'armature des jambes postérieures ressemble celle du *H. africanus* Sauss., mais par le reste cette espèce est plus prochaine du *H. funambulus* de la Nouvelle Guinée.

Les éperons externes des jambes postérieures sont assez petits, l'intermédiaire qui est le plus grand n'est pas aussi grand que l'inférieur interne; le supérieur interne est deux fois et demi aussi long que l'intermédiaire interne et ne dépasse pas le métatarse postérieur.

Cet insecte a une grande ressemblance avec *Homœogryllus japonicus* Haan. Outre le *H. africanus* Sauss. on connait deux autres espèces du genre *Heterotrypus*, le *laqueatus* et le *maculosus* Karsch, mais aucune d'elles peut se confondre avec la nouvelle espèce.

Gen. Fryeria, gen. nov. (Pl. **14**, fig. 23).

Corpus subcylindricum, antrorsum subattenuatum, breviter pubescens. Caput breve, convexum, inter antennas rostratum, inter oculos impressum. Ocelli in trigonum æquilaterale dispositi: rostrum marginibus acutiusculis parallelis vel anterius subdivergentibus. Oculi magni sed parum exserti. Antennæ validæ, corpore longiores. Palpi maxillares longi; articulo ultimo subsecuriformi apicem versus valde latiore. Pronotum subcylindricum, elongatum, antrorsum leviter angustius, superne indistincte deplanatum, antice subsinuatum, postice medio subarcuatum et utrinque sinuatum; lobi deflexi duplo longiores quam altiores, angulis inferioribus rotundatis, parallelis. Elytra apicem femorum posticorum superantia, in ♂ tympano perfecte explicato, venis obliquis anterioribus et posterioribus divergentibus; vena mediastina ramosa. Alæ elytra parum superantes, cercorum apicem haud attingentes. Pedes validi, compressi. Tibiæ anticæ extus speculo ovali, in latere interno minuto. Tibiæ anticæ intermediæque superne sulcatæ; intermediæ distincte tumidæ. Femora postica valde compressa, a latere visa ovaliformia, parte apicali filiformi nulla. Tibiæ posticæ validæ, inter spinas magnas spinis minoribus duabus vel tribus instructæ. Calcaria externa minuta, interna longiora, calcar superum maximum, inferum minimum. Metatarsus brevis, extus bidentatus, intus spina apicali tantum armatus: articulus secundus cordiformis, depressus. Cerci longe pilosi. Lamina subgenitalis ♀ compressa, apice sinuata. Ovipositor rectus, longissimus, linearis, valvis apice haud dentatis.

Genre intermédiaire entre *Madasumma* Walk. (*Calyptotrypus* Sauss.) et *Paræcanthus* Sauss. mais ressemblant tout à fait à ce dernier genre par la forme cylindrique du corps et par le pronotum allongé.

Je me fais un plaisir de dédier ce genre si intéressant au savant Mr J. C. F. Fryer, explorateur de l'île d'Aldabra.

58. *Fryeria aphonoides*, sp. nov. (Pl. **14**, fig. 23).

Testaceo-ferruginea, griseo-villosa. Oculi brunnei. Labrum fuscum. Antennæ concolores. Elytra ♂ venis obliquis duabus, anterioribus parvis, ultimis ab anterioribus divergentibus, longis, sinuatis et parallelis, speculo antice angulato, medio vena transversa diviso; campo apicali magno, venis plurimis regularibus, apicem

versus directis, in parte proximali a venis transversis connexis, in parte distali venis transversis nullis; campo laterali pluri-venoso, antice venis 7 subparallelis, ramis radialibus 8 sinuatis.

Long. corp. ♂ 34; pron. 4,5; elytr. 24; fem. post. 15 mill.

Long. corp. ♀ 34; pron. 5; elytr. 27; fem. post. 17; ovip. 17 mill.

Loc. Aldabra, 1908—9 (Fryer).

Gen. Euscyrtus, Guérin.

59. *Euscyrtus bivittatus* Guérin, Icon. R. Anim., Ins. p. 334 (1844).

Loc. "Seychelles. Often swept from grass, &c. from the coast up to over 1000 ft. Silhouette: from near Mont Pot-à-eau, and Mare aux Cochons 1000 ft., VIII—IX. 1908. Mahé: near the coast (Anonyme Island, &c.); Cascade Estate, &c."

J'avais déjà indiqué cette espèce comme se trouvant aux Seychelles: j'ai même signalé deux variétés, l'une (*abbreviatus*) à ailes raccourcies ne dépassant pas les élytres, que je retrouve aussi parmi les exemplaires de Mahé; et l'autre, à ailes longues, que j'ai nommée *fuscinervis*, dont le dos des élytres est orné de chaque côté de lignes transverses brunâtres.

Parmi les exemplaires de Mahé, outre la variété *abbreviatus*, il y a des exemplaires à ailes bien développées, et dont tout le dos, à partir de la tête, est d'un brun obscur. Je considère ces exemplaires plus prochains du type de l'espèce tel qu'il a été décrit par Guérin, et de Saussure; ce dernier a indiqué le Natal comme habitat de cette espèce.

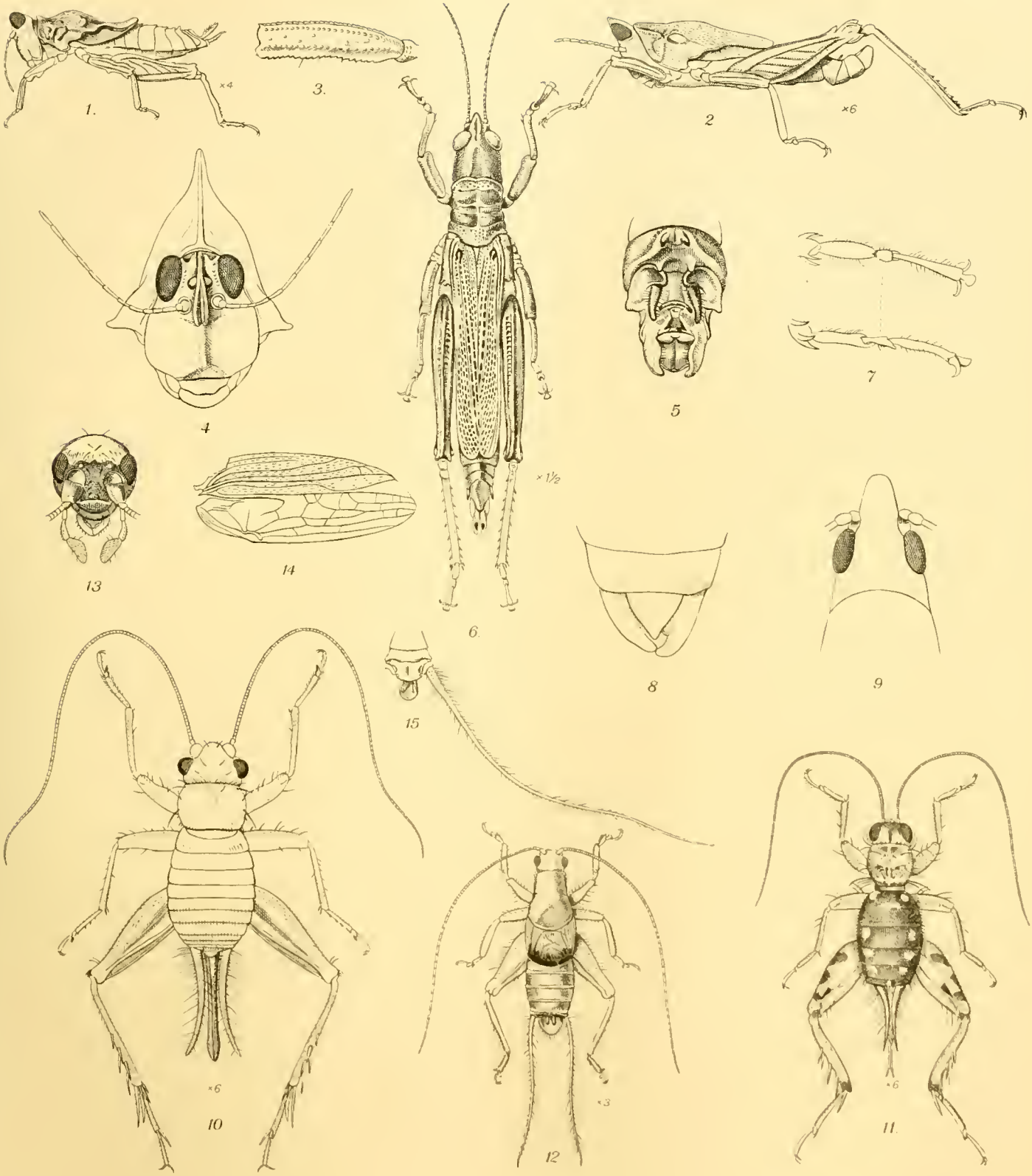
EXPLICATION DES PLANCHES 13 ET 14.

Planche 13.

Fig. 1. *Ocytettix pupulus*, sp. nov., ♀.
Fig. 2. *Procytettix fusiformis*, gen. et sp. nov., ♂.
Fig. 3. *Paratettix chagosensis*, sp. nov., ♀, face externe du fémur intermédiaire.
Fig. 4. *Coptottigia cristata*, gen. et sp. nov., ♀, tête et pronotum, de devant.
Fig. 5. *Pœdes cruciformis* Bolivar, ♂, extrémité de l'abdomen.
Fig. 6. *Rhynchotettix gardineri*, gen. et sp. nov., ♀.
Fig. 7. „ „ „ „ „ tarsus postérieur.
Fig. 8. *Plangia ovalifolia*, sp. nov., ♂, lamina supra-analis et cerci.
Fig. 9. *Conocephaloides chagosensis*, sp. nov., ♂, tête, de dessus.
Fig. 10. *Scottia chagosensis*, gen. et sp. nov., ♀.
Fig. 11. *Scottia salticiformis*, gen. et sp. nov., ♀.
Fig. 12. *Ornebius elegantulus*, sp. nov., ♂.
Fig. 13. *Pentacentrus nigrifrons*, sp. nov., ♂, tête.
Fig. 14. „ „ „ „ ♂, elytron.
Fig. 15. „ „ „ „ ♂, extrémité de l'abdomen.

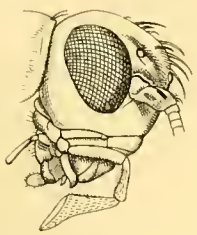
Planche 14.

Fig. 16. *Gryllapterus tomentosus*, gen. et sp. nov., ♀, tête, du côté.
Fig. 17. *Phœogryllus fuscus*, gen. et sp. nov., ♀, patte postérieure, face externe.
Fig. 18. *Seychellesia nitidula*, gen. et sp. nov., ♀.
Fig. 19. „ *patellifera*, gen. et sp. nov., ♀, palpe maxillaire.
Fig. 20. „ „ „ „ „ ♀, tibia et tarsus de la patte postérieure droite.
Fig. 21. *Zarceus major*, sp. nov., ♂.
Fig. 22. *Heterotrypus insularis*, sp. nov., ♂, extrémité de tibia, et tarsus, de la patte postérieure droite.
Fig. 23. *Fryeria aphonoides*, gen. et sp. nov., ♂.



E Wilson, Cambr. lith.

ORTHOPTERA



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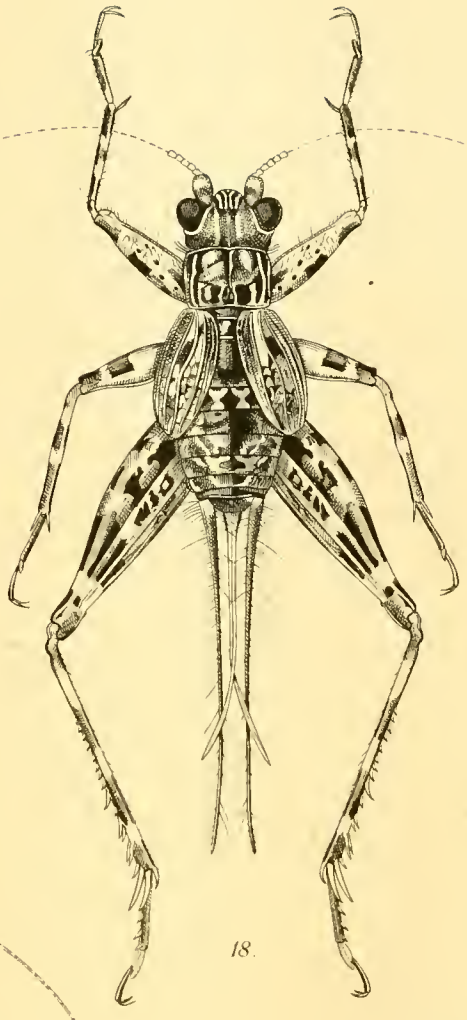

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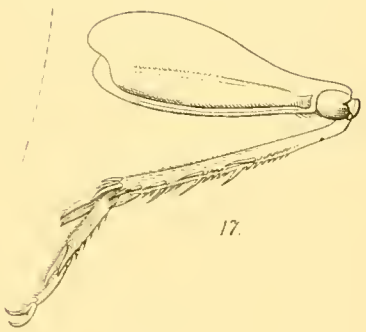

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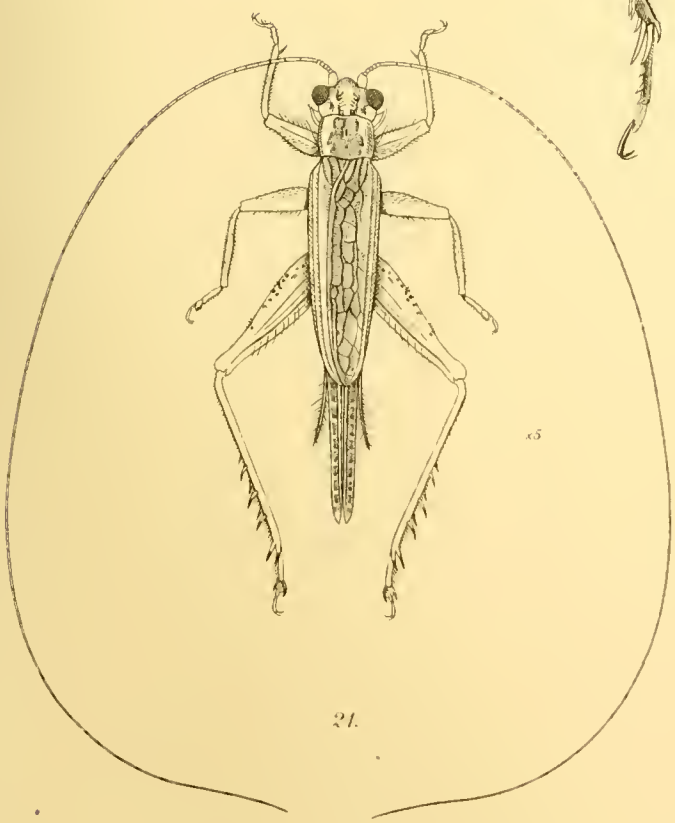

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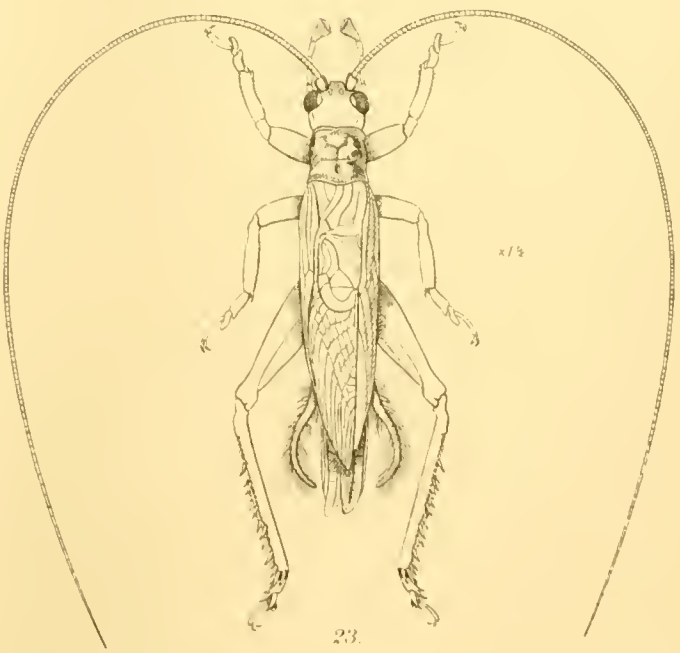

23.

No. XVII.—ORTHOPTERA, PHASMIDÆ OF THE SEYCHELLES.

By *Dr Ignacio Bolivar and Charles Ferrière, B.Sc., *University of Geneva.*

(With 2 Text-figures.)

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 21st March 1912.

The Phasmidæ brought from the Seychelles by the Percy Sladen Trust Expedition are remarkable firstly by the character of their local distribution within those islands. Out of the 6 species found there, 5 are peculiar to the Seychelles, and only 1 single species (*Phyllium bioculatum* Gray) is widely distributed. Now Mr Scott informs me that all the specimens of the 5 peculiar species (i.e. the *Carausius* and *Græffea*) collected by him, and among which are 3 new species, were found in the mountain-forests, most of them in the highest parts, among the endemic forest vegetation: on the other hand no *Phyllium* was found by him in the forests, but all those in the collection were given by residents or local collectors, who stated that these insects are found in the foliage of guava-bushes (*Psidium*), and perhaps of some other non-endemic plants in the lower cultivated country.

If we consider now the wider geographical distribution we see that all the species of *Phyllium* recorded from the Seychelles are found, outside that country and Mauritius, only in India, Ceylon, and the East Indies; and that, likewise, the genus *Carausius* has its centre of distribution in the Malay Archipelago, and extends also into India, Ceylon, the South of China, and Australia; while the genus *Græffea* has been hitherto recorded only from Australia, Celebes, New Guinea, Fiji, Society Islands and other localities in those regions†.

* The two authors' portions of the work are distinguished by their names being placed in brackets at the end of each of their several sections. The double authorship is explained as follows. A small but interesting series of Phasmidæ was collected by the "Sealark" Expedition in 1905. This material was worked out by Dr Bolivar, and sent back by him to Cambridge: he found among it a new species (*Carausius gardineri*), the description of which is included in this paper, and also two others (first obtained by Alluaud in 1892) which he had previously described in Ann. Soc. Ent. France, xiv. 1895, pp. 369—385. A much larger material was collected in 1908—9, and this was studied by M. Ferrière at the Cambridge University Museum in the autumn of 1911. He not only had before him the material determined by Dr Bolivar and the latter's manuscript, but he also visited the Hope Department of the Oxford Museum in order to consult the fine collection of Phasmidæ preserved there. In the Seychelles collection of 1908—9, he referred a large number of specimens to the species already determined by Dr Bolivar, but he also described the two new species *Carausius scotti* and *Græffea seychellensis*. M. Ferrière has incorporated his own and Dr Bolivar's manuscripts into the present paper and written the introduction thereto. I have myself added certain particulars as to localities, habits, &c., and have also, with Dr Bolivar's permission, translated those parts of his manuscript which were written in French.—Hugh Scott.

† The Indo-Australian affinities of the Seychelles Phasmidæ are commented on by Professor Kolbe in the introduction to his paper on "Die Coleopterenfauna der Seychellen," Mitt. Zool. Mus. Berlin, v, 1910, pp. 7 & 8.

The 4 Seychelles species of *Carausius* form within the limits of that genus a very definite group, being all of them distinguished by certain characters which separate them from the other members of the genus. They are the only representatives of the large tribe of the Lonchodini found outside the geographical area formed by the Oriental and part of the Australasian Regions.

On the other hand, of the Phasmidæ of East Africa and Madagascar, not a single representative was found in the Seychelles.

As for the genus *Græffea*, the discovery of a representative of it in the Seychelles, so far removed from the centre of distribution of the genus, is a remarkable fact. (*C. Ferrière.*)

Tribe **Phyllini.**

Phyllium Illiger, Käf. Preuss. p. 499, 1798.

1. *Phyllium bioculatum* Gray, in Griffith's Animal Kingdom, vol. xv. (Ins. ii.), p. 191, pl. 63, fig. 3, 1832; Bolivar, Ann. Soc. Ent. France, vol. lxiv. p. 374, 1895; Brunner and Redtenbacher, Die Insektenfam. der Phasm., p. 174, 1906.

Loc. Seychelles. Silhouette, 1908 : 1 adult and 1 immature ♂, 1 adult and several immature ♀. Mahé : 4 adult ♀, and a number of immature ♀ in various stages of development, and eggs ; one of the adult ♀ was marked (when alive) with patches of reddish colour on the femora, tibiæ, the large nervures of the tegmina, and the abdomen ; the other adult ♀ were almost uniform green. None of the specimens were found in the high mountain-forests. Also known from Mauritius, India, Ceylon, Java, Sumatra, Borneo.

Note. Three other species of *Phyllium* have been recorded from the Seychelles : *P. gelonus* Gray, also known from Ceylon and the East Indies : *P. celebicum* de Haan, also recorded from Burmah, Philippine Is., Celebes, &c. : and *P. siccifolium* Linnaeus, also recorded from Mauritius, India, Indo-China, Philippine Is., Moluccas, &c. : see Brunner and Redtenbacher, *op. cit.* pp. 174, 175 and 176. None of these were obtained by the Percy Sladen Trust Expedition. (*C. Ferrière.*)

Tribe **Lonchodini.**

Carausius Stål, Rec. Orth. iii. p. 8, 1875.

2. *Carausius alluaudi* (Bolivar).

Lonchodes alluaudi Bolivar, Ann. Soc. Ent. France, vol. lxiv. p. 372, 1895.

Carausius alluaudi Brunner and Redtenbacher, Die Insektenfam. der Phasm., p. 274, pl. 12, fig. 6 *b* (♂), 1907.

The fact that the length of the intermediate femora compared with that of the metanotum brings this species near to the genus *Lonchodes*, made me originally decide to place this species in that genus rather than in *Carausius*. This character distinguishes all the Seychelles species from the rest of the species of *Carausius*. Redtenbacher was wrong in ascribing to this species the character "femora omnia apice subtus mutica." It can be seen that I said in my original description "femora omnia inermia, tantum subtus ante aream apicalem bidentata." (*I. Bolivar.*)

Loc. Seychelles. La Digue (Alluaud). Silhouette; high damp forest, about 2000 feet, VIII. 1908, 1 ♂. Mahé; 1905, 3 ♂, 1 ♀ (Gardiner); forest near Morne Blanc, X—XI. 1908, 2 ♂, 4 ♀; forest above Cascade Estate, several ♂ and 2 ♀. In the high jungle above Cascade, 23. I. 1909, 6 ♂ were found clasping (with the lobes of the anal segment) a single ♀ at various points on the underside of the abdomen; a 7th ♂ was close by. When alive the adult ♂ were conspicuously reddish, while the adult ♀ are greyish-brown (Scott).

3. *Carausius sechellensis* (Bolivar).

Lonchodes sechellensis Bolivar, Ann. Soc. Ent. France, vol. lxiv. p. 373, 1895.

Carausius sechellensis Brunner and Redtenbacher, Die Insektenfam. der Phasm., p. 274, pl. xii. fig. 6 *a* (♀), 1907.

This species was originally described by Dr Bolivar from specimens obtained in Mahé by M. Alluaud in 1892. A single ♂ and 2 ♀, obtained in Mahé and Praslin in 1905 by Professor Stanley Gardiner, were considered by Dr Bolivar to be a new species, which he called in his MS. *C. bicornutus*. His description of this proposed new species is as follows:—

"*Carausius bicornutus*, sp. nov.

Lonchodes sechellensis Bolivar, Ann. Soc. Ent. France, vol. lxiv. (1895), p. 373, ♀ (haud ♂).

Carausius sechellensis Brunner et Redtenbacher, Die Insektenfam. der Phasm. 1907, p. 274, ♂ (Tab. 12, fig. 6 a, ♀).

Caput inter oculos bispinosum ♂ et ♀ nec non occipite biseriato-tuberculato-spinoso. Pronotum antice bispinulosum, in ♂ granulosum in ♀ spinulosum. Mesonotum atque metanotum in ♂ minus triquetra quam in ♀, granulosa, carinis lateralibus denticulatis, in ♀ spinosis. Femora intermedia et postica subtus apice utrinque unidentata, carina media inermi; intermedia metanoto cum segmento mediano longiora. Tibiæ normales, carina media inferne prope basin obtuse et breviter angulata. Segmentum anale ♂ tectiforme, triangulariter et breviter emarginatum; lobis parvis, intus dentibus nigris seriatis instructis. Lamina subgenitalis transverse subcarinata, carina medio subgibbosa. Segmentum anale ♀ semicirculariter sinuatum. Lamina supraanalis parva, trigona, apposita. Abdomen subtus linea media plus minusve granosa.

Long. corp.	♂ 68	.....	♀ 87
,, mes.	18	.....	22
,, metan. c. segm. m. ...	12	.....	13
,, segm. m.	2,5	.....	2,8
,, femor. ant.	21	.....	22
,, ,, interm.	15	.....	16
,, ,, post.	18	.....	18."

It will be seen from the above that Dr Bolivar thought that the ♀ previously described as *C. sechellensis* should be referred to the proposed new species (*C. bicornutus*), while the ♂ previously described as *C. sechellensis* should remain under that name: so

that *C. sechellensis* would remain as a species of which only the ♂ is known. I have had for examination a much larger material, consisting of a number of ♂ and ♀ obtained in 1908—9, in addition to those obtained in 1905. An examination of this series has convinced me that it is impossible to separate *C. sechellensis* from *C. bicornutus* ♂. According to Bolivar's description given above, *C. bicornutus* ♂ differs from *C. sechellensis* only in having two spines on the head between the eyes, shorter lobes on the anal segment, the subanal lamina transversely carinate, and in having no tooth at the base of the tibiæ. But in the series of ♂ before me, the spines between the eyes vary much in length and in some cases are very little developed; the length of the lobes and the form of the subanal lamina also vary from one individual to another. These small characters vary independently of one another. As to the little tooth said to be present at the base of the tibia in *C. sechellensis*, I have been unable to see it in any specimen. I consider that the differences are only of the nature of individual variation, and quite insufficient to separate the series into two species; I therefore retain all the specimens under the name *C. sechellensis* Bolivar. (*C. Ferrière.*)

Loc. Seychelles. Silhouette: high damp forest near Mont Pot-à-eau, about 2000 ft., VIII. 1908, 1 ♂; near Mare aux Cochons, IX. 1908, 4 ♂ and 3 ♀ (including a ♂ and a ♀ taken *in coitu* at night on a wild pineapple-plant). Mahé: 1 ♂, 1 ♀, and 1 immature ♀, 1905 (Gardiner); near Morne Blanc, Cascade Estate, and other localities, 1908—9, 2 adult ♂ and 6 immature ♂. Praslin: XI—XII. 1908, 1 very large ♂, and 1 ♀; 1905, 1 ♀ (Gardiner). Félicité: 14—18. XII. 1908, 2 ♂, 2 ♀.

4. *Carausius gardineri*, sp. nov.

Caput muticum, subelongatum, retrorsum subangustatum, antice vix pone antennas transverse impressum; postice binodosum. Pronotum læve, sulcatum. Mesonotum et metanotum tectiformia, in ♂ gracilia, marginibus parallelis, in ♀ antice subangustata, in ♀ tantum granulosa, marginibus haud dentatis sed granulis callosis, parvis, præcipue in metanoto distinctis. Femora omnia inermia, subtus prope apicem nec lobata nec dentata; femora intermedia metanoto cum segmento mediano distincte ♂ vel vix ♀ longiora. Abdomen granulosum. Segmentum anale ♂ compresso-tectiforme, postice profunde fissum, lobis elongatis, intus denticulis nigris munitis. Segmentum anale ♀ late triangulariter emarginatum, lobis obtusis. Lamina supraanalis parva, subtrigono-rotundata. Segmentum abdominale ventrale septimum ♀ apice medio callosum et angulariter productum, fuscum.

Long. corp.	♂ 52	..... ♀ 64
„ meson.	13	 17
„ metan. c. segm. m. ...	9,8	 11,5
„ segm. m.	1,5	 2
„ fem. ant.	14,5	 16
„ „ interm.	11	 11,5
„ „ post.	13	 14

This new species of *Carausius* from the Seychelles must be placed near the other species which are found in the same islands, on account of the form of the upper side of

the body, which is elevated in the manner of a roof (though this character is less strongly marked than in the other species); and on account of the intermediate femora in the ♂ being markedly longer than the metanotum and median segment together, while in the ♀ they are almost of the same length. This is the only Seychelles species in which the femora are quite unarmed. (*I. Bolivar.*)

Loc. Seychelles. Mahé: Morne Seychellois, 1905, 2 ♂, 2 ♀ (Gardiner);, 1905, exact locality unrecorded, 2 ♀; high forest near Morne Blanc, X—XI. 1908, 7 ♂, 3 ♀, and 2 immature ♀; Cascade Estate, 1908—9, 1 ♂; 1908—9, exact locality unrecorded, 1 ♂, 3 ♀. Silhouette: from high forest near Mont Pot-à-eau, some from 2000 feet or more, VIII. 1908, 6 ♂, 2 ♀, and 1 immature ♀. This is a typically mountain-forest species: the ♂, which are usually very dark in colour, were frequently swept from beds of fern in the high damp forests: the adult ♀ were brown when alive (Scott).

5. *Carausius scotti*, sp. nov. (Fig. 1.)

♂. Caput inter oculos bispinosum, postice bituberculatum. Antennæ nigræ, pedibus anterioribus longiores. Pronotum utrinque 3-spinosum. Mesonotum tectiforme, tuberculis aliquibus sparsis instructum, atque postice 4-spinosum. Metanotum læve, postice bispinosum. Segmentum medianum et segmenta abdominis 2—8 postice bispinosa; segmenta 9 et 10 haud spinosa. Segmentum anale compresso-tectiforme, lobis parvis. Lamina subgenitalis in modo ejus *C. alluaudi* constructa. Femora omnia inermia, intermedia et postica ante aream apicalem subtus bidentata: intermedia metanoto cum segmento mediano longiora.

Long. corp. 78 mm. pron. 3. meson. 21. metan. cum segm. med. 14½. segm. med. 2½. abdom. 38. fem. ant. 24. fem. int. 17. fem. post. 20.

Yellowish-brown; black at the articulations. Head short, dark brown, with two spines between the eyes and two smaller spines on the occiput. Antennæ black, longer than the front legs. Pronotum dark, with six little spines, regularly placed in two series, the two front ones longer. Mesonotum roof-like, parallel-sided, with only a few tubercles and four spines near the posterior end, of which the two anterior are nearer the middle line and longer. Mesosternum keeled and smooth. Metanotum smooth, with two spines closely approximated near the posterior end. Median segment and the following abdominal segments except the two last, each with two spines at the hind end, the spines becoming gradually smaller towards the extremity of the abdomen. Abdomen narrow, suddenly enlarged between the 8th and 9th segments. Anal segment roof-like, compressed; lobes short, provided inside with little black teeth. Cerci short. Subanal lamina gibbous with the posterior edge truncate and sinuate. Front femora unarmed, longer than the mesonotum. Intermediate and posterior femora provided at the apex with two little teeth. Intermediate femora longer than the metanotum and the median segment together. Tibiæ all unarmed.

This single specimen has a peculiar and remarkable aspect owing to the presence of the black spines regularly placed in pairs at the posterior end of each segment (except the two last), and to the yellowish-brown colour passing to black at the articulations of the body and legs. It comes near the other Seychelles species of *Carausius* in the

roof-like form of the body,—less visible on the abdomen—its long black antennæ, the form of the anal segment and the subanal lamina, and the two little teeth at the apex of the intermediate and posterior femora, which teeth are found also in *C. alluaudi* and *C. sechellensis.*

This species is dedicated to Mr Hugh Scott. (*C. Ferrière.*)

Loc. Seychelles. Silhouette: high damp forest near Mont Pot-à-eau, VIII. 1908, 1 ♂.

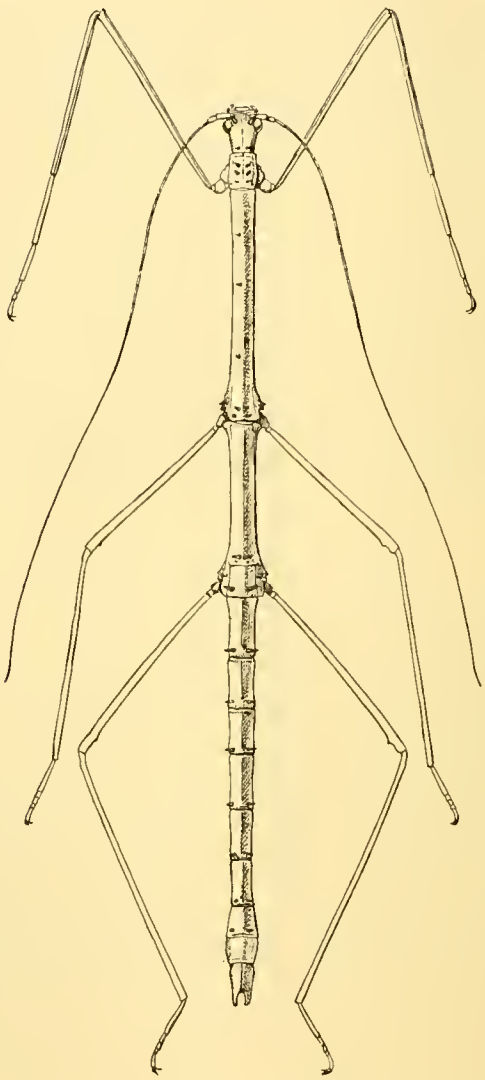

Fig. 1. *Carausius scotti*, ♂; × 1½.

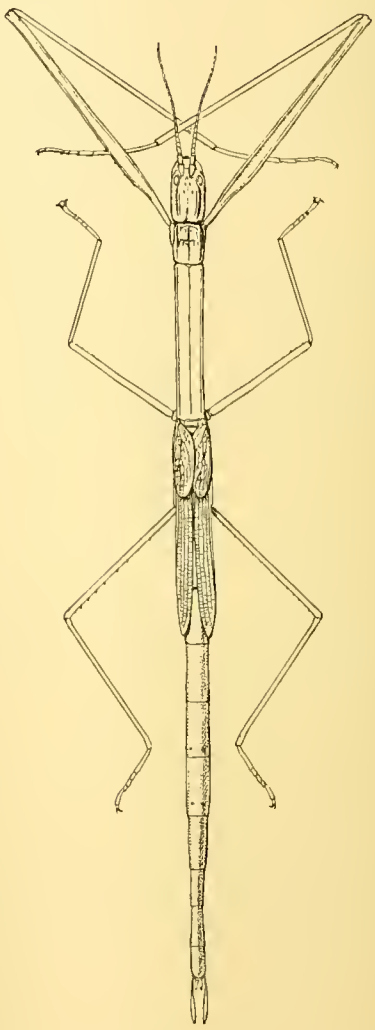

Fig. 2. *Græffea seychellensis*, ♀; natural size.

Note. The collection contains a number of immature specimens of *Carausius*, the species of which cannot be determined. Many of these were green when caught, and were swept from beds of fern in the high damp forests, often together with the little dark males of *C. gardineri.*

Tribe **Phibalosomini.** Section **Platycraniæ.**

GRÆFFEA Brunner, in Dr Graeffe, Reisen im Innern der Insel Viti Levu, p. 46, 1868; Brunner and Redtenbacher, Die Insektenfam. der Phasm., p. 370, 1908.

6. *Græffea seychellensis*, sp. nov. (Fig. 2.)

♀. Caput elongatum, læve. Pronotum et mesonotum læve. Segmentum medianum longius metanoto. Elytra ovata, marginem posticum segmenti mediani haud attingentia. Alæ elongatæ, segmentum 4 abdominis vix attingentes; areâ posticâ hyalinâ, ad marginem exteriorem vix roseâ. Cerci elongati, lanceolati. Operculum elongatum, acuminatum, abdomen vix superans. Femora inermia, carinâ inferâ medianâ subtiliter denticulatâ.

Long. corp. 106 mm. antenn. 16½. cap. post antenn. 5½. pron. 5½. meson. 20. metan. cum segm. med. 12. segm. med. 7. abdom. 59. cerc. 8. elytror. 9. alar. 24. fem. ant. 34. fem. int. 16. fem. post. 20.

Reddish-brown, with dark irregular spots. Head light reddish-brown, with longitudinal dark lines, lighter on the cheeks and the occiput, elongate, smooth, with a fine longitudinal groove behind each eye, small eyes and large cheeks. Antennæ dark, distinctly articulated, shorter than the front femora. Prothorax short; prosternum almost as long as broad. Mesonotum dark-spotted, smooth, elongate, slightly wider in front. Median segment longer than the metanotum. Abdomen elongate, segments nearly 2½ times as long as broad, the three last not much shorter. Anal segment with a small median longitudinal keel. Cerci long, narrow, lanceolate. Operculum boat-shaped, elongate and pointed, extending very little beyond the extremity of the abdomen. The lower valvulæ of the ovipositor are filiform. Elytra oval, not extending to the posterior end of the median segment: veins well-marked, light on the dark-brown ground. Wings long, reaching nearly to the posterior edge of the 4th abdominal segment: posterior part transparent, slightly rose-coloured at the outer margin. Front femora bent at the base; with four carinæ, of which the two upper ones are very near together and smooth. The lower and inner carina is slightly notched in all the femora. Tibiæ all unarmed. Front tarsi much elongate. (*C. Ferrière.*)

Loc. Seychelles. Silhouette: 1 adult ♀ beaten from a native palm (*Stevensonia*) in the high forest above Mare aux Cochons, 27. IX. 1908; 1 immature ♀ from high damp forest near Mont Pot-à-eau, about 2000 ft., VIII. 1908. Mahé: 1 adult ♀ and several very young ♀ from high forest near Morne Blanc, X—XI. 1908; Cascade Estate, 1 immature ♀, 1908—9. Praslin: 1 immature ♀, XI—XII. 1908. The very young specimens were bright green when alive, two of the youngest with a dark median longitudinal stripe on the thorax and abdomen. The colour of the adults is described above (from the dried specimens) as reddish-brown, but during life was probably greyer (Scott).

The genus *Græffea* till now has been found only in the Polynesian islands. It is therefore interesting to find it represented in the Seychelles, so far from its geographical

centre. The fact that it has not been found either in the East Indies or in Ceylon makes its presence in the Seychelles more curious.

That this species is a true *Græffea* seems to me to be quite clear from a consideration of its various characters. In general structure it resembles *G. lifuensis* Sharp (in A. Willey's "Zoological Results," Part I, 1898, p. 86, pl. 9, fig. 21), the type ♀ of which I have examined in the Cambridge University Museum; but differs from it by its more slender form, its smooth mesonotum and by the much more developed elytra and wings. (*C. Ferrière.*)

No. XVIII.—NEW FISHES FROM ALDABRA AND ASSUMPTION, COLLECTED BY MR J. C. F. FRYER.

By C. Tate Regan, M.A.

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 1st February 1912.

A small collection of fishes from the Indian Ocean made by Mr J. C. F. Fryer and sent to me for determination by Professor Stanley Gardiner, includes examples of three species apparently new to science, including a new eel of some interest, as although it seems to be an Anguillid in most of its characters, it has the branchial openings into the pharynx small, as in the Murænidæ.

Family **Anguillidæ.**

Xenoconger, gen. nov.

Body elongate, naked; dorsal and anal fins well developed, confluent with the reduced caudal; no pectorals or ventrals. Snout broad and flat; nostrils lateral, the anterior with a short tube. Mouth terminal, moderately wide; maxillary ending just behind eye, not extending to angle of mouth. Teeth pointed, conical or slightly compressed, forming broad bands in the lower jaw; maxillary teeth biserial; vomerine teeth a rounded patch continued backwards as a pair of curved bands, each of a smaller outer and larger inner series.

Palato-pterygoids present, anteriorly embracing the vomer; lower pharyngeals convergent anteriorly, not separating the other branchial arches; tongue not free; branchial openings into the pharynx small; external branchial apertures lateral, of moderate size.

Apparently nearest to *Nettastoma* and its allies, but differing widely in the short snout and restricted inner branchial apertures.

1. *Xenoconger fryeri*, sp. n.

Tail nearly twice as long as rest of fish; head about $\frac{2}{5}$ of the length from gill-opening to vent; head as broad as deep, its depth less than $\frac{1}{3}$ its length; snout rounded anteriorly, slightly broader than long, its length nearly $\frac{1}{4}$ the length of head and 3 times the diameter of eye. Jaws equal anteriorly; cleft of mouth horizontal, extending behind eye a distance equal to the diameter of the latter. Anterior nostril near end of snout; posterior in front of lower part of eye. Dorsal commencing at a distance from the gill-opening equal to $\frac{3}{4}$ the length of head. Brownish, spotted or marbled with blackish.

A single specimen, 400 mm. in total length, from Assumption Island. Mr Fryer captured it in a large pit in the rock, about 10 yards square and 10 to 15 feet deep, which was apparently cut off from the sea although it was nearly full of sea-water.

Family **Gobiidæ.**

Parioglossus, gen. nov.

Head and body strongly compressed; head naked; body covered with small scales. Mouth terminal, protractile, very oblique; præmaxillaries with 6 canines, and with an inner series of smaller teeth; lower jaw with 4 or 5 canines on each side of the symphysis, and with the lateral teeth smaller, uniserial. Gill-opening vertical, in front of base of pectoral fin, not produced forward below. Two dorsals, the first of 6 spines, the second of 16 or 17 rays; anal of a feeble spine and 15 soft rays; pelvics close together but separate, each of a spine and 4 soft rays.

In the length of the second dorsal and anal fins this genus is intermediate between *Allogobius*, Waite, 1904 and the other Gobiid genera with only 4 soft rays in the pelvic fin. *Allogobius* has large scales, 10 soft rays in the second dorsal and 8 in the anal, the head only slightly compressed, and the mouth not very oblique. *Ioglossus*, Bean, 1882, is nearer *Parioglossus*, but seems to differ in the wider gill-openings; it has 22 to 24 rays in the soft dorsal. *Vireosa*, Jord. and Snyder, 1901, has a mental barbel, and *Oxymepoton*, Bleek. and *Orthostomus*, Kner, are distinguished by having at least 30 rays in the soft dorsal and anal.

2. *Parioglossus tæniatus*, sp. n.

Depth of body 6 in the length, length of head 5. Snout very short; mouth nearly vertical, the articulation of lower jaw below the anterior margin of eye; diameter of eye about $\frac{2}{5}$ length of head. A dark band from eye to end of caudal fin; dorsals and upper edge of caudal dusky.

Two examples, 25 and 30 mm. in total length, from the Pacard Lagoon, Aldabra. The larger, probably a male, has the anal fin dark-edged and the dorsal fins higher, with the rays more or less produced.

Family **Blenniidæ.**

3. *Salarias aldabrensis*, sp. n.

Depth of body less than length of head, 6 to $6\frac{1}{2}$ in the length of the fish. Anterior profile somewhat convex, nearly vertical; mouth subterminal; lower jaw with a pair of canines; a short fringed tentacle above the eye. Dorsal xiii—xiv 21—23, low, notched, not continuous with the caudal. Anal 28, long and low. Body pale, with several pairs of violet cross-bars; fins pale, the spinous dorsal dark-edged.

Three specimens, 30 to 35 mm. in total length, from Dunes de Maistre, Aldabra. These fishes "sit on the rocks at low tide."

MARINE BIOLOGICAL LABORATORY WOODS HOLE MASS.

No. XIX.—DIPTERA: LONCHÆIDÆ, SAPROMYZIDÆ, EPHYDRIDÆ, CHLOROPIDÆ, AGROMYZIDÆ.

By C. G. Lamb, M.A., B.Sc., *Clare College, Cambridge.*

(Plates **15**, **16** and Text-Figures 1—33.)

(Communicated by Professor J. Stanley Gardiner, F.R.S., F.L.S.)

Read 20 June, 1912.

Lonchæidæ.

Lonchæa, Fallén.

Lonchæa Fallén, Dipt. Suec., Ortal., (1820), p. 25.

1. *Lonchæa splendida* Loëw, Beschr. Europ. Dipt., iii. p. 292.

Several specimens of this fine species were collected. It is known from the Mediterranean Region.

Localities. Seychelles. Bird Island, VII. 1908 (Fryer). Dennis Island, VIII. 1908 (Fryer). Mahé: Cascade Estate, about 800 ft. and over, 1908—9. Praslin: Côtes d'Or Estate, XI. 1908.

2. *Lonchæa plumata*, n. sp.

This is a black species with black legs; the calypters are pale and pale-haired; there is a long terminal abdominal segment in the ♂ like that of *L. inæqualis*, Loëw.

♂. The whole insect is uniformly black, including the legs.

Head (Pl. **15**, fig. 1). Frons nearly parallel-sided, slightly narrowing from the vertex to the front fronto-orbital bristle. The vertex and the narrow eye-margins as far as the insertion of the fronto-orbital bristles are very shining. The rest of the frons (including the lower part of the eye-margins) is dull, but the space below the lunule and between the antennal bases is covered with shining dust. The lower eye-margins are black. Labrum just visible in front, antennal foveæ shallow but evident. The face widens rapidly from the frons to the mouth.

Eyes large, very long-oval in profile, bare.

Antennæ with second joint somewhat greyish, third joint long and laterally compressed, slightly concave in front in side view with a rounded tip, about four times as long as broad, with tip extending almost to the mouth margin. Arista pale and thickened

at the base, then black; it is very beautifully feathered, each ray being shaped like an elongated S: there are about 18 rays each side. Palpi stout, fleshy, black and hairy, somewhat compressed sideways.

One pair of fronto-orbital bristles, two pairs of verticals, the outer much weaker than the inner, a fine pair of forwardly-directed divergent post-verticals, stout ocellars: in profile the frons is seen to be finely haired all over.

Thorax. Dorsum clothed with adpressed hairs, but the hind part is bare. Scutellum duller and greyish in colour. Bristles normal.

Wings (Fig. 1) pellucid with yellow veins, the fine costal ciliation black. Calypters small, whitish yellow, pale-margined and white-haired.

Halters black with paler stalks.

Legs. Front: femora with two rows of long bristly hairs; tibiæ and tarsi clothed with short bristly hairs. Middle: femora all covered with short bristly hairs, an inferior posterior row of longer ones is conspicuous; tibiæ with similar fine bristles and a terminal crown of spines; tarsi with black bristly hairs. Hind: covered with fine bristly hairs, among which is a somewhat conspicuous row below the femora.

Fig. 1. *Lonchæa plumata*, n. sp., wing.

Abdomen. ♂. The last segment is slightly longer than the two previous ones together (Pl. **15**, fig. 2) and has the form of a truncate triangle with the end notched. The two angular tips thus formed bear a bunch of black bristly hairs. The whole surface dorsal and ventral is covered with similar hairs which are stouter on the margins of the segments and towards the end of the last segment.

♀ like the male, except as follows:—Face about one-third as wide again as that of the male; abdomen with equal segments except the one before the ovipositor, which is a little narrower; the ovipositor is shining black, acicular, scarcely flattened, the sheath is paler.

Size about 4 mm.

Localities. Seychelles. Silhouette: Mare aux Cochons, over 1000 ft., IX. 1908. Mahé: Port Victoria, XII. 1908; Long Island, VII. 1908; Anonyme Island, I. 1909; marshy ground near sea-level at Cascade, 20. II. 1909; cultivated country about 1000 ft., XI.—XII. 1908; near Morne Blanc, about 800 ft., X.—XI. 1908; Cascade Estate, 800—1700 ft. and over, 1908—9; forest behind Trois Frères, about 2000 ft., 14. I. 1909; Mare aux Cochons district, about 1500 ft., I.—II. 1909.

3. *Lonchæa longicornis*, n. sp.

A shining bluish-black species with red metatarsi, pale calypters with pale hairs.

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♂. **Head** (Pl. **15**, fig. 3). Vertex and frons somewhat shining and slightly hairy; eye-margins smoother and more shining, especially from the vertex to the fronto-orbital bristles: the front part of the frons and the lower part of frontal eye-margins dull. The upper part of the eye-margins narrows considerably from the vertex to the fronto-orbital bristles. A silvery spot lies between the bases of the antennæ. Face with silvery dust and a well-marked narrow central linear keel; the face widens rapidly from the antennæ to the mouth. Antennæ close to eyes, so that in front view the antennæ are markedly divergent. Eyes bare.

Antennæ black with the third joint somewhat dusted inside, it is very long and nearly parallel-sided, with an evenly-rounded tip extending in side view well below the mouth margin; arista long, and microscopically pubescent, brownish at the base, the rest black.

One fronto-orbital bristle, fine post-verticals, long ocellars; frons fine-haired in profile.

Palpi fleshy, black and hairy.

Thorax. Dorsum bristly-haired, both it and the pleuræ are shining black with a distinct blue tinge. Scutellum also shining black but with a faint greenish tinge. Bristles normal.

Wings normal: venation much as the last species, but with the lower cross-vein slightly more oblique; brownish in colour, with yellow-brown veins.

Calypters pale with pale borders and hairs.

Halters all black.

Legs black except that all the tarsi are reddish-yellow. Front: femora with the usual two rows of bristles with some irregular and shorter bristles between; the upper backwardly-directed row is regular, the lower downwardly-directed row has five or six bristles which are not so long as usual. Middle: femora with a regular row of strong hairs below; tibiæ with only one stout inner bristle of the terminal crown evident. All the legs covered with fine bristly hairs.

Abdomen. Ovate in outline with nearly equal segments and a bluntly-pointed tip. From a top view it is seen to be bordered with long fine black bristles; the outer corners of the second segment with abundant black hairs; dorsum with longish bristly hairs but no very evident marginal bristles.

♀. Frons wider than in male, nearly parallel-sided. Ovipositor long black non-flattened with a black sheath; when fully extended it is nearly as long as the rest of the abdomen.

Size about 3 mm.

Locality. Seychelles. Mahé: Cascade Estate, about 1000 ft., 1908—9.

4. *Lonchæa vibrissifer*, n. sp.

A black species with yellow metatarsi, calypters pale and pale-haired, and with very long vibrissæ.

♂. **Head** (Pl. **15**, fig. 4). Frons dull, slightly narrowing from the vertex to the antennæ; in side view it is seen to be bristly-haired; the bristles on the eye-margins bend backwards, those on the disc of the frons bend forwards, so that in profile the frons appears to be covered with bristles crossing about at right angles. Upper eye-margins which include the vertical and fronto-orbital bristles are bristly, slightly shining and rather short. Face slightly silvery, widening rapidly from antennæ to mouth. Jowls very evident, black-haired. Eyes bare.

Antennæ: third joint black, slightly dusted, short, about twice as long as broad: when looked at from in front the tip of the antenna does not reach the curved mouth margin by about half the length of the third joint. Arista pale at base then black, microscopically pubescent.

The bristles are normal, the ocellars being stout. There is a prominent stout vibrissa on each side of the mouth.

Palpi retracted, brownish black.

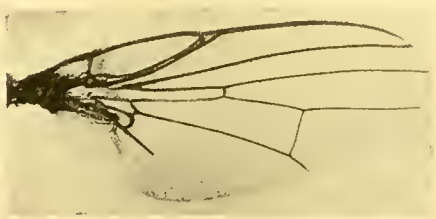

Fig. 2. *Lonchæa vibrissifer*, n. sp., wing.

Thorax. Shining black with normal bristles and stout bristly hairs extending nearly up to the prescutellar bristles. Scutellum same colour as thorax.

Wings (Fig. 2) brownish in tone with brown-yellow veins. Calypters pale with pale borders and hairs.

Halters black with stalks slightly paler in the middle.

Legs all black except that the metatarsi and the next joint in the front and middle legs and the next two joints in the hind legs are yellow. The front femora have the inferior row of bristles longer than usual, forming a regular comb. Middle femora with a stout ciliation below and the tibiæ with no crown of spines.

Abdomen similar to the last species but somewhat more truncate at the tip.

♀ with a wider frons, the ovipositor short and much flattened, with a pale sheath.

Size a little over 3 mm.

Localities. Seychelles. Silhouette: plateau of Mare aux Cochons, over 1000 ft., IX. 1908. Mahé: Cascade Estate, about 1000 ft.; Morne Seychellois, over 1500 ft., 4. II. 1909.

Sapromyzidæ.

PACHYCERINA, Macquart.

Pachycerina Macquart, Suite à Buffon, ii. (1835), p. 511.

5. *Pachycerina seychellensis*, n. sp.

This species must be closely related to *P. javana* Macq.

♂. **Head** (Pl. **15**, fig. 6). Frons dull yellow orange, paler towards the vertex; the ocellar spot dull black, nearly circular, but slightly drawn out to the vertex. The two fronto-orbital bristles stand on greyish spots, the spot of the hind one is the larger and is connected to the vertex by a continuing pale greyish line. Face very shining yellow from just above the antennal base to the mouth margin; it has the usual two roundish black shining spots. Palpi with black heads, the rest yellow. Tongue yellow.

Two fronto-orbitals, inner and outer verticals, crossed post-verticals, very fine ocellars between the ocelli, and a very fine pair on the vertical black spot just at the vertex. Hind head bristled on the eye-margins below the outer verticals. A fine row of hairs bordering the cheeks and on the jowls.

Antennæ yellow; the first joint pyriform, second cylindrical, bristled at the apex beneath and at the base on top, third very long and gradually tapering to a blunt end; arista black with very dense stout feathering.

Thorax. Dorsum shining, marked longitudinally with brownish and yellowish stripes. Three dorso-central bristles, the last two in the same transverse row as the prescutellar pair of bristles, and two regular rows of achrosticals. The surface has also various scattered hairs; some of these form well-defined side rows of small bristles, seen best on viewing the thorax sideways; one such row is a continuation of the dorso-central bristles, another runs roughly parallel to the line of those bristles, but is more remote from the centre line of the dorsum; this row begins a little before the front dorso-central bristle and ends a little before the third. The yellowish stripes are between the achrostical rows and on the line of the dorso-centrals, and extend to the front of the thorax; between these three rows are the two brownish stripes. A similar short brownish stripe runs from the intra-humeral bristle to the front of the thorax; between this and the three post-humeral bristles the humeri and dorsum are again yellow, which colour continues from the side row of bristles over to the hind part of the pleuræ.

Pleuræ yellow with a broad brown stripe extending from the wing base to the front, a similar narrow stripe on the sterno-pleural suture.

Scutellum yellow, slightly darkened centrally and at the base, disc somewhat flattened, the usual four strong bristles.

Wings normal in venation, yellow but slightly darkened along the costal edge; veins yellow.

Halters yellow.

Legs with the usual preapical tibial bristle. Front: femora yellow, brownish on the upper surface with three rows of stout bristles, the underneath row the strongest, tibiæ

black with extreme tip yellowish; tarsi all black, the last joint with long hairs on the dorsal surface. Middle: all yellow with a crown of two spines on the end of the tibia. Hind: yellow.

Abdomen. Shining yellow brown to blackish with a few scattered hairs; the hind margin of the segments with a row of very long bristles, especially well developed on the third and fourth segments, these marginal bristles extend over the sides. The terminal segments of the ♂ form a distinct hypopygium of rounded outline, a ventral view of which is given in Pl. **15**, fig. 5; the last segment has a pair of projecting processes with a fine horny process between. Sixth segment with two black dots.

♀. The female is similar to the male but has a somewhat pointed abdomen.

Size, excluding antennæ, 4 mm.

Localities. Seychelles. Silhouette: near Mt. Pot-à-eau, about 1500 ft., VIII. 1908; Mare aux Cochons, IX. 1908. Mahé: Long Island, VII. 1908; marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909; from grass in cultivated country, about 1000 ft., XII. 1908; near Morne Blanc, 800 ft., XI. 1908; Cascade Estate, ca. 1000 ft., 1908—9.

6. *Pachycerina obscuripennis*, n. sp.

In general form and characters this species is much like the last, it is, however, a very dark suffused form. The differences are given below.

♂. **Head.** The ocellar spot is elliptical in outline, extending over the vertex with the hind pair of ocelli standing on its minor axis. The grey line joining the vertex to the upper fronto-orbital bristle is more evident and broader. Antennæ: first and second joints dark brown, the second with more hairs, arista more densely haired.

Thorax. Dorsum all black brown, the colour extending right up to the scutellum, with a fine yellow line between the achrostical bristles and a yellow border extending from the humeri to round the edge of the scutellum.

Wings suffused with black, darkening towards the costa.

Halters black.

Legs, front femora yellow with a black tip.

Abdomen. All shining black with appendages like those of the former species.

Size as last species.

Locality. Seychelles. Silhouette: forest above Mare aux Cochons, IX. 1908.

Sapromyza, Fallén.

Sapromyza Fallén, Dipt. Suec., Ortal., (1820), p. 29.

Sub-gen. Sapromyza, sens. str.

7. *Sapromyza striata*, n. sp.

This species has the general appearance and the long plumose antennæ of the sub-genus *Minettia*, but it has only one intra-alar bristle visible.

Head (Pl. **15**, fig. 7). Frons dull, whitish yellow, a slightly darker indistinct stripe extends from the vertex to the base of the antennæ. Face white. Back of head yellow behind the vertex, blackish behind the eyes; below the yellow part are two silvery dots with black bristly hairs on them. Chætotaxy normal, but the post-verticals long and crossed not merely convergent.

Antennæ yellow, slightly darkened inside at the tip; arista brown at base with black flagellum, long haired on the top with about 15 rays, shorter rayed below.

Palpi black; tongue pale.

Thorax. Dorsum pale brownish white with two broad brown stripes extending from just above the shoulders over dorsum and over scutellum where they are confluent, so that the scutellum may be said to be brown with whitish sides. Between the two brown dorsal stripes is a whitish stripe, all three being of approximately equal breadth in front. Chætotaxy normal with three dorso-centrals; the achrosticals are arranged in eight roughly parallel and equidistant rows of equal sized bristles. Pleuræ yellowish white.

Wings as Fig. 3; spotted, with yellow veins.

Halters yellow.

Fig. 3. *Sapromyza striata*, n. sp., wing.

Legs all yellow. Front: femora with conspicuous rows of spines on the lower and hind sides. Middle: femora with a row of five spines on the front side at the tip; tibiæ with a crown of spines at the tip. All the legs have the usual covering of small bristly hairs.

Abdomen. Yellow, the boundaries of the segments edged with black, the edging of all but the third segment being marginal, that of the third somewhat remote from the margin. A black and slightly interrupted median line runs along the dorsum of the third to the fifth segments joining each transverse black line to the base of the segment.

Size, excluding the antennæ, 4½ mm.

Localities. Seychelles. Silhouette: near Mt. Pot-à-eau, about 1500 ft., VIII. 1908; Mare aux Cochons and forest above, IX. 1908. Mahé: high damp forest between Trois Frères and Morne Seychellois, about 1500—2000 ft., XII. 1908. Praslin: Côtes d'Or Estate, XI. 1908. Félicité: forest, XII. 1908.

Note. This species must be closely related to *Lauxania* (*Sapromyza*) *bilineata* Speiser, Wiss. Ergebnisse d. Schwed. Zool. Exp. nach dem Kilimandjaro, Dipt. p. 173.

The next two species are structurally very similar as regards shape of head, nature of chætotaxy, size, etc. The principal difference is in the antennæ.

8. *Sapromyza funebricornis*, n. sp.

Head (Pl. **15**, fig. 8). Frons dull brownish yellow, eye-margins and ocellar spot somewhat shining. Face whitish yellow, jowls with scattered bristles, vertex bristly along edge from centre round the eye-margins. Antennæ with first two joints brownish, third joint black; arista sub-plumose, black, the basal joint pale.

Palpi pale, filiform, with a few long bristles on the lower side.

Chætotaxy normal, post-verticals crossed about half-way; all the bristles stout.

Thorax. Greyish yellow, uniformly covered with tiny bristles; between the dorso-central rows these form the achrostical bristles which are somewhat irregularly arranged in six rows, the four middle rows being fairly regular and equidistant, the bordering rows more irregular.

Chætotaxy normal with (1 + 2) dorso-centrals, humeral, two post-humeral, one presutural, two supra-alar, one intra-alar, two prescutellar.

Scutellum the same colour as the thorax, broadly rounded at the tip.

Wings (Fig. 4) slightly tinged with yellow; veins yellow.

Fig. 4. *Sapromyza funebricornis*, n. sp., wing.

Fig. 5. *Sapromyza mahensis*, n. sp., wing.

Halters yellow.

Legs all yellow. Front femora with the usual two rows of bristles towards the end on the posterior side, both upper and lower rows have about three bristles; the interior lower side (where it would be clasped by the tibia if the leg were closed) has a distinct row of tiny bristles on the tip third. Middle femora with a stout row of some five bristles on the distal end of the anterior side, tibiæ with a crown of spines. Hind femora evidently ciliated beneath, the ciliation beginning at the middle and getting longer towards the tip. The bristly hairs so commonly present on the ventral parts of the middle and front sterno-pleuræ and on the coxæ are very well developed.

Abdomen. The same colour as the thorax; margins with stout bristles which extend over to the margin of the succeeding segment. The surface has scattered hairs. The segments diminish slightly in size from the second to the last.

In the male there is a slightly swollen hypopygium, but none of the specimens possessed the appendages referred to in the next species.

Size, excluding antennæ, $3\frac{1}{2}$ mm.

Localities. Seychelles. Silhouette: low coconut-planted country near the coast, Pointe Étienne, 17. IX. 1908; Mare aux Cochons plateau, one specimen, IX. 1908.

Mahé: marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909; Long Island, VII. 1908; Anonyme Island, I. 1909; Mare aux Cochons district, 1000—2000 ft., one specimen, I.—II. 1909. All the specimens except two (indicated above) are from near the coast.

9. *Sapromyza mahensis*, n. sp.

This species is very closely allied to the preceding with which it is compared.

Head. Form very like last: antennæ all pale yellow; third joint slightly larger; arista differs as follows: in *S. funebricornis* the top rays are long at base and diminish to the tip, the lower rays are finer and shorter at the base than at the apex so that the upper and lower rays are of about equal length for the distal two-thirds of the arista: in *S. mahensis* the rays are finer, more distant and on the top are of equal length for about the first two-thirds of the arista; below they are nearly as long as above, fine and also equally long for the first two-thirds of the arista. The venation (Fig. 5) differs slightly as will be seen from Figs. 4 and 5.

The bunches of hairs on the sterno-pleuræ and coxæ are less stout. The whole insect is more shining and of a clearer yellow colour.

In a few specimens the male genitalia are extruded (Pl. **15**, figs. 9, 10). These have a median lobe hooked at each side and notched in the middle, two side hooked appendages and a little fleshy hump covered with hairs. In most specimens this is retracted, when the insect has a somewhat swollen knobby hypopygium.

Size as last species.

Localities. Seychelles. Mahé: Long Island, VII. 1908; Anonyme Island, from grass, etc., I. 1909; marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909; cultivated country near sea-level at Cascade, II. 1909.

10. *Sapromyza nudiuscula*, n. sp.

Head (Pl. **15**, fig. 11). Frons and face entirely the same dull bright yellow: clypeus visible in front: mouth margin slightly but sharply produced as seen in profile. Antennæ bright yellow, third joint shortish oval, arista brownish but pale at the base and very finely pubescent.

Palpi yellow, narrow, with a few fine hairs.

Bristles less strong than the last two species.

Thorax. Dorsum yellow to brownish yellow covered with fine black bristles (1 + 2) dorso-centrals: achrosticals in four regular rows with no irregular bordering ones. Chætotaxy quite normal with smaller and less stout bristles than the preceding two species. Scutellum distinctly flattened on the disc.

Wings narrower but with venation like *S. mahensis*, barely tinged with yellow; veins pale.

Halters yellow.

Legs all yellow. Front femora with the usual two rows of bristles behind both very long; the upper row has six to seven bristles and extends from base to tip of femur, the

lower row has four bristles, the basal ones being the longer, and also extends all along the femur. Middle tibiæ with the terminal crown reduced to one long bristle inside. Hind femora with one or two fine terminal bristles outside, tibiæ with one very short stout spine at the end.

The coxal and sterno-pleural hair bunches are sparser and shorter than in the last species.

Abdomen. Yellow; surface bristly; marginal bristles present; segments of nearly equal length.

Size about 3 mm.

Localities. Seychelles. Mahé: near Morne Blanc, X. 1908. Silhouette: near Mt. Pot-à-eau, about 1500 ft., VIII. 1908.

11. *Sapromyza crassicaput*, n. sp.

A single specimen was collected of this species, which is at once distinguished by its unusually large head. It has two brown-black spots on the fourth abdominal segment; except for this and the somewhat infuscate front legs, it is entirely yellow.

♂. **Head** (Pl. **15**, fig. 12). The frons is a slightly duller but brighter yellow than the rest of the insect: ocelli reddish. Back of head with regular bristles recalling the post-ocular bristles of the *Dolichopidæ*; cheeks bristly.

Palpi yellow and hairy. The usual two fronto-orbital bristles present, inner and outer verticals, post-verticals somewhat below the vertical margin towards the back of the head and crossed, ocellars more delicate.

Antennæ all yellow including the basal joints of the arista, third joint fairly long, aristal flagellum black and slightly pubescent.

Thorax. Three dorso-centrals; the arrangement of the achrosticals is rather difficult to observe as the dorsum is depressed by the pin, they appear to be irregularly six-rowed. Other bristles normal.

Wings normal, glassy with yellow veins.

Halters yellow.

Legs yellow except that the front pair are slightly infuscate, especially on the tibiæ and tarsi, and that the middle tarsi are the same. Front femora with the usual row of backwardly-directed bristles above and a row beneath.

Abdomen. Finely haired; marginal bristles on all but the middle part of the segments. A large black spot on each side of the fourth segment occupying nearly the whole breadth.

Size, excluding the antennæ, $3\frac{3}{4}$ mm.

Locality. Seychelles. Mahé: Cascade Estate, 800 ft. or more.

12. *Sapromyza perpunctata*, n. sp.

A single specimen was collected belonging to the group with pictured wings.

Head (Pl. **15**, fig. 13). Vertex and frons brown, yellow above the antennæ. The ocelli on a distinct tubercle, fronto-orbital bristles on small black spots. Face brown.

Two fronto-orbital bristles, verticals, post-verticals a little below vertex on back of head, ocellars. Antennæ: first two joints dark brown, third paler; arista pale with fine pubescence.

Thorax. Black-brown variegated with ochreous patches. Dorso-central bristles (1 + 3) each standing on a black spot in the ochreous patch. Pleuræ black-brown with ochreous-grey patches, the bristles standing on small black spots on the grey patches. Scutellum as thorax with a pale terminal and two side spots.

Wings variegated as in Fig. 6; darkened between costa and fourth vein, a white spot behind auxiliary vein, three (the middle smallest) between the costa and first vein, two between first and second, two rows of small spots between third and fourth, a spot in front of cross-vein; tip between second and third white. Between the fourth vein and the margin the wing is marked like that of a Tephritid.

Halters black.

Legs: femora all ringed with two black and two ochreous rings, beginning with a proximal black ring; tibiæ yellow with an indistinct ring proximally. Tarsi all yellow.

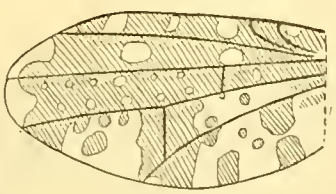

Fig. 6. *Sapromyza perpunctata*, n. sp., wing.

Front femora with the usual backwardly-directed top row of bristles and an underneath row, the latter long. The middle tibiæ have a fine terminal spine in addition to the preapical bristle.

Abdomen. Brownish-black like the thorax. On each distal and proximal margin is a central triangular pale spot, the proximal ones being the larger; the apices of these meet in the case of the second segment and nearly meet in the others, hence this row of spots forms an interrupted median line: on the distal margin of each segment there is also a row of pale circular spots three each side on the second segment, two each side on the third, fourth and fifth; each pale spot has a black central dot from which proceeds a marginal bristle. There are also a few other minute dots near the proximal margin of the segments and on the disc of the same.

Size, excluding antennæ, $2\frac{3}{4}$ mm.

Locality. Seychelles. Mahé: Cascade Estate, about 1000 ft., 1909.

Sub-gen. Homoneura, De Meijere.

Homoneura De Meijere, Tijdschr. voor Entom., li. (1908), p. 142.

Three species belong to this sub-genus, but none of them fit in with the characters in the table given by De Meijere (*l.c.*), nor with any hitherto published descriptions.

13. *Homoneura varifrons*, n. sp.

Head (Pl. **15**, fig. 14). Dull-black behind and forward to before the antennæ where the frons is bright orange-yellow: the side stripes on which the fronto-orbital bristles stand are shining brown-black and extend far forward on the frons to the yellow cross-line: the margins between these stripes and the eyes are distinct from the stripes and are dark reddish-brown; the ocellar spot is shining, and a long-pointed frontal triangle extends forward from the spot which is perceptibly more shining than the rest of the central part of the frons though its boundary is not well defined. The face is entirely orange-yellow as are the eye-margins below and the jowls.

Antennæ: first and second joints dark orange, third with its apical two-thirds blackish, the rest of it dark orange; the degree of darkening is somewhat variable. Arista with the basal joint and first part of second stout, basal joints pale, flagellum black with a black plumosity, which is longest at the base and tapers thence to the tip, the rays below are shorter and of fairly equal length.

Palpi darkened orange, especially on the under surface. Tongue orange with fleshy tip. Head bristles normal; a row of fine bristles on the lower eye-margin above the mouth edge; jowls bristly.

Fig. 7. *Homoneura varifrons*, n. sp., wing.

Thorax. All completely black, moderately shining; dorsum with a very faint brown pollination, pleuræ very slightly shining. Bristles normal, prescutellars rather small, achrosticals in six rows. Pleuræ very slightly silvery.

Wings (Fig. 7) almost glassy, very slightly tinged with yellow; veins yellow.

Halters with dark knobs and yellow stalks.

Legs. In the two males the legs are all pale yellow; front femora with the usual two rows of bristles behind, top row with about six equal bristles, lower row three towards the tip succeeded by a ciliation. Middle femora with two bristles at the end which are longer than the other normal bristles, tibiæ with a crown of two long bristles as well as the usual preapical one. Hind femora with an evident preapical bristle on the front side.

Abdomen. Black with marginal bristles and small ones on the surface. The male genitalia much as Pl. **15**, figs. 9, 10 but not extruded.

The females, in most cases, have slightly darkened middle and hind femora, the darkening extending nearly all over the joints; the extent of this suffusion varies, and in one case the legs are pale like the male.

Size, excluding antennæ, about $2\frac{3}{4}$ mm.

Localities. Seychelles. Silhouette: Mare aux Cochons, over 1000 ft., VIII.—IX. 1908; near Mt. Pot-à-eau, about 1500 ft., VIII. 1908. Mahé: Cascade Estate, ca. 1000 ft., 1908—9; Anonyme Island, from grass, etc., I. 1909.

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14. *Homoneura atra*, n. sp.

This species is in facies exceedingly like the last. The thorax and abdomen are also completely black, but the slight pollination is practically absent, and the pleuræ are not slightly silvery. The differences between the two species are given below.

Head. Frons, face and jowls entirely black except for a small brown space just above the antennæ and the brownish lower eye-margins. Antenna with the third joint brown, the others black. Palpi black.

All the legs are slightly darker orange; front femora darkened, middle and hind femora quite black.

Size as last.

Locality. Seychelles, Silhouette: Mare aux Cochons, over 1000 ft., IX. 1908.

15. *Homoneura pulchrifrons*, n. sp.

Head. The central area of the frons is of a very striking deep velvety black; the side stripes on which the fronto-orbital bristles stand are broad and shining black, they extend right up to the eyes and are joined across the vertex by a narrow shining strip from which the front point of the small shining ocellar triangle projects. The back of the head is also shining black except for a central silvery spot. Face with the top half shining black, the lower half yellow, the broad eye-margins are paler yellow. Below the antennæ on each side of the eye-margin is a silvery spot. Jowls yellow.

Palpi black, tongue yellow.

Antennæ entirely velvety black, arista plumose with the longest rays on top at base tapering to the tip, shorter and more uniform in length below.

Thorax. Dorsum somewhat shining brownish black, slightly dusted, with the humeral calli and a line from them over the wing bases brownish yellow: sterno-pleuræ brown. Scutellum as the thorax but slightly paler round the margin and pale below, the metanotum is yellow.

Wings slightly yellow, tinged with brown-yellow veins.

Halters yellowish with browner knobs.

Legs all yellow: front femora with the usual two rows of bristles, the upper extending nearly to the base with five or six bristles, lower with two distinct bristles on the distal third: middle femora with a distal row of four or five bristles on the front side, tibiæ with a crown of two spines as well as the preapical bristle; hind femora with small preapical bristle.

Abdomen. Moderately shining black, with marginal bristles and small general bristles.

Male hypopygium with a central lobe and two side hooks, the central lobe itself ending in two hooks.

Size as last species.

Localities. Seychelles. Silhouette: from near Mt. Pot-à-eau, about 1500 ft., VIII. 1908; Mare aux Cochons and forest above, IX. 1908. Mahé: from near Morne Blanc, X. 1908; high forest of Morne Blanc and Pilot, XI. 1908; Mare aux Cochons district, about 1500 ft., I.—II. 1909. Praslin: Côtes d'Or Estate, XI. 1908.

Ephydridæ. Notiphilinæ.

ACANTHONOTIPHILA, n. g. (Pl. **15**, fig. 23).

This genus comes near *Notiphila*, Fallén.

Head. Eyes longish oval with the major axis vertical and the radius of curvature greater at top than bottom. Jowls present. Face and frons broad, nearly parallel-sided, in profile somewhat hollowed beneath antennæ. Hind head somewhat protuberant. Vibrissæ present. Prelabrum visible.

Bristles; inner and outer verticals, two upper fronto-orbitals (bent outward), two lower (bent forward); divergent ocellars; fine post-verticals, two pairs of stout bristles on the frons.

Antenna as in *Notiphila*; the second joint bristly with a very stout terminal spine; the arista with few rays (three in the typical species).

Fig. 8. *Acanthonotiphila coriacea*, n. g. et n. sp., wing.

Thorax and scutellum covered with stout bristly hairs, which are arranged in moderately regular rows; they are similar in character all over the dorsum so that there is no distinction between the achrostical and the other rows. A pair of prescutellars but no definitely assignable dorso-centrals: one humeral, one intra-humeral, two noto-pleural, two supra-alar, four scutellar (the terminal pair crossed at the tips), two meso-pleural, one sterno-pleural.

Wings (Fig. 8), costa to third vein but also rather thickened between third and fourth veins, bristly to the first, the last bristle being longer and like a small spine; third vein with three or four bristles on the dorsal side, where it is met by the second vein.

Abdomen with segments of nearly equal length.

The texture of the insect is coriaceous.

Type, the following species.

16. *Acanthonotiphila coriacea*, n. sp. (Pl. **15**, fig. 23).

Head. Frons darkish grey, the bristles standing on minute black spots; the frontal triangle is marked out by two rows of slightly converging fine hairs which begin from the

inner vertical bristles. Inside the triangle stand the ocellar bristles, two smaller slightly convergent bristles just beyond the front ocellus, and two stout parallel bristles nearly in a line with, but proximate to, the line joining the front pair of fronto-orbitals. There are a few hairs in the space between the frontal triangle, the eyes and the last fronto-orbital bristle.

Face slightly widening to the mouth, somewhat silvery, the prelabrum yellowish on its margin. Jowls about one-fifth the vertical height of the eyes. Two vibrissæ on each side and a bristle on the jowl below the eye. Back of head the same colour as the frons. Antennæ with first and second joints yellow, third joint brown. Arista with three side and one terminal rays.

Palpi yellow with a few stout black hairs below; tongue rather horny.

Thorax. Olivaceous with minute granular pollination; chætotaxy as in generic description; scutellum darker but paler at the tip; pleuræ dark grey, slightly shining, hairy on the meso-pleura and about seven hairs on the sterno-pleura, three in a horizontal row at the top and four in a vertical row from the mid-point. Metanotum somewhat shining, silvery grey.

Wings glassy with yellow veins, costa ciliated with fine closely-packed black hairs, stouter on the first section.

Halters pale.

Legs. Coxæ yellow; femora all dark brown-grey except the knees; tibiæ suffused; tarsi yellow except the last joint in hind and middle and last two joints in front legs. All the legs clothed with short bristly hairs; a longer row below the front femora; a stout spine at the end of the middle tibiæ. The hairs on the tarsal joints are exceptionally evident.

Abdomen. Shining brown-black, the last segment being the darkest; the distal margins of the segments are very narrowly lined with a paler tone. Dorsum covered with bristly hairs, the marginal ones longer: the last segment has some eight still longer bristles, which stand out more nearly perpendicular to the surface.

Size. $2\frac{1}{3}$ mm.

Locality. Seychelles. Mahé: from seaweed on beach at Anonyme Island, I. 1909.

Paralimna, Loëw.

Paralimna Loëw, Monograph of the Diptera of N. America, i. (1862), p. 138.

17. *Paralimna lineata* De Meijere, Tijdschr. voor Entom., li. (1908), p. 165.

This species was described from Semarang: the specimens from the Seychelles agree closely with the description.

Localities. Seychelles. Mahé: from marshy ground just behind the beach at Port Glaud, 5. XI. 1908; marshy ground near sea-level at Cascade, 20. II. 1909.

HECAMEDE, Haliday.

Hecamede Haliday, Ann. Mag. Nat. Hist., ser. 1, iii. (1839), p. 224.

18. *Hecamede lacteipennis*, n. sp.

This is a very distinct and brightly-coloured species.

Head (Pl. **15**, fig. 15). Frons with a large grey triangle extending to the lunula, eye-margin grey, the rest of frons orange-yellow: this colour thus forms two triangles pointing backwards from the front margin: the lunula is whiter. The bristles are as follows: inner and outer verticals, a pair of bristles just behind the line joining the hind ocelli, two other pairs near the margin of the triangle, the pair nearer the back of the head being about half-way down the triangle, the other pair half-way between the former pair and the point of the triangle; in addition the triangle has some dozen bristly hairs of which two form a distinct pair just at the tip of the frontal triangle. There are two pairs of fronto-orbital bristles, the front pair bent forwards, the other backwards. The face is silvery white with a distinct suture running up each side to meet the margins of the lunula: just along the side of this suture is a row of three vibrissæ, the top ones standing on a very small hillock; the facial knob is small, shining and very prominent.

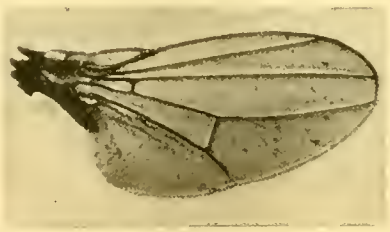

Fig. 9. *Hecamede lacteipennis*, n. sp., wing.

The jowls are shining silvery and have only one or two fine bristles instead of the many bristles of *H. albicans*; the tongue is reddish-yellow with its bent tip only about half the length of that of the latter species. The palpi are pale yellow.

Antennæ as in *H. albicans*, with pale yellow second joint and slightly darkened third joint; arista short with four side and one terminal rays.

Thorax. Similar in form to *H. albicans* but is pale grey in colour like the abdomen of that species; its surface and that of the concolorous scutellum is uniformly covered with short stout bristly hairs; chætotaxy normal including the six scutellar bristles.

Wings as Fig. 9, white, with perfectly pale veins.

Halters yellow.

Legs yellow except the femora which are rather dark silvery grey; the last tarsal joint somewhat suffused.

Abdomen concolorous with thorax, except that the base is often slightly reddish; dorsum with sparse scattered bristles, those on the last two segments being longer.

Size. 2 to 2½ mm.

Localities. Astove Island: 1907 (Thomasset). Coetivy: 24. IX. 1905. Seychelles: Mahé, from seaweed on beach at Long Island, VII. 1908.

Mosillus, Latreille.

Mosillus Latreille, Hist. Nat. Ins. et Crust., xiv. (1804), p. 389.

19. *Mosillus albipennis* Loëw, Stettin. Ent. Zeit., viii. (1848), p. 14.

This species is recorded from S. Europe, Egypt and Teneriffe. The Cambridge Collection contains several specimens from Durban, Natal.

Locality. Seychelles. Mahé: one specimen from Anonyme Island, I. 1909.

Enchastes, n. g. (Pl. **15**, fig. 21).

A single specimen (in excellent condition) of a new genus near *Mosillus* was in the collection; though but a single specimen is available it is thought best to give a full description of the proposed genus, as the insect is of considerable interest. The genus *Mosillus* was long considered to be in the Chloropidæ, but was finally placed among the Ephydridæ from the presence of certain structural details, although the general facies is very strongly that of a black Chloropid. The present insect is similar to *Mosillus* in many important respects but is more Ephydrid in form and is of a dull green surface which is slightly shagreened, recalling the texture of *Pelina*.

Head. Eyes bare, long, oval with axis vertical; jowls deep. Antennæ with rounded third joint, which is but little larger than the second; the basal bristle on the second joint is minute though evident. The top fronto-orbital bristles are small and in line with the front ocellus, the other fronto-orbitals are reduced to hairs. Small inner verticals and a pair on the frons just beyond the front ocellus. The most striking difference between *Mosillus* and *Enchastes* is best seen on a front view (Pl. **15**, fig. 22). In *Mosillus* the sutures extending from the ends of the lunule each side and separating the face from the cheeks are very nearly parallel; the eyes are round; hence the cheeks widen greatly from the antennal level downwards. In the present genus these sutures diverge somewhat; the eyes are long-oval and hence the cheeks are much more nearly of constant breadth from the antennal level downwards.

The face is protuberant and has a large oblong shining knob: the four facial bristles stand on extremely minute hillocks. The prelabrum is very protuberant and is rectangular or spade-like in profile.

Thorax and scutellum, dorsum with the surface minutely granulate and covered with short bristly hairs instead of the fine hairs of *Mosillus*. The last pair of dorsocentral bristles, a single notopleural bristle just before the wing base, two mesopleural which are not very strong, two scutellars crossed at the tip. The scutellum is rounded at the tip. Wings and legs much as in *Mosillus*.

Type, the following species.

20. *Enchastes scotti*, n. sp. (Pl. **15**, fig. 21).

Head (Pl. **15**, fig. 22). Form etc. as described and figured for the genus; frons dull dark grey, a frontal triangle is demarcated by two rows of tiny bristles. Eye-margins narrow and more silvery.

Antennæ orange red.

Face shining grey with four bristles each side pointing to the centre line and a few other scattered ones; facial knob extremely shining. Jowls and back of head rather silvery. Prelabrum horny, shining with silvery sides and central spot; tongue coriaceous, the palpi are hidden.

Thorax and scutellum blackish with a fine faintly greenish granulation and black bristles.

Wings with venation as figured with third and fourth veins convergent at the end; veins pale.

Halters orange.

Legs: femora and tibiæ dark black-grey with orange knees and tarsi except the last joint. The middle femora with stronger bristles in front.

Abdomen shining black-grey slightly suffused with reddish at the base; second, third and fourth segments increasing progressively in breadth, fifth pointed, pollinated and more hairy than the others.

Size. Just under 3 mm.

Locality. Seychelles. Mahé: from seaweed on beach at Anonyme Island, I. 1909.

Discomyza, Meigen.

Discomyza Meigen, System. Beschr., vi. (1830), p. 76.

21. *Discomyza similis*, n. sp.

This species is allied to the Palæarctic *D. incurva* Meigen, from which it differs in many points but most markedly in the breadth relative to the length. It is about as long as *D. incurva* but is proportionately more slender than that insect; the ratio of maximum thoracic breadth to length measured from the scutellar junction to the front margin is slightly greater than $1\frac{1}{3}$ in *D. incurva*, while in the new species the ratio is about unity: this ratio holds approximately also for the head and abdomen.

The following description is based principally on the differences between *D. similis* and *D. incurva*.

Head. The frontal triangle is proportionately larger and is somewhat wrinkled or rugose instead of being flat and shining. The face is similarly knobbed on each side below the antennæ, but just below these there are from six to eight small circular pits instead of a shining triangle. Antenna black, the third joint slightly suffused with grey instead of the second joint being extensively bright red, the arista is six-rayed: the chætotaxy is the same, but the bristles are longer and less stout. Correlated with the greater ratio of length to breadth the face is more rounded in outline.

Thorax slightly greyer in tone with the scutellum more pointed, and not abruptly cut across.

Wings, as Fig. 10, with blackened costa.

Halters pale yellow.

Legs the same, front pair all black, middle and hind black except for the bright red first to fourth joints to the tarsi.

Size. Most specimens are from 3 to $3\frac{1}{4}$ mm., but one measures only $2\frac{1}{4}$ mm.

Localities. Seychelles. Mahé: from marsh just behind beach at Port Glaud, 5. XI. 1908; Anonyme Island, I. 1909; marshy ground near sea-level at Cascade, 20. II. 1909; marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

Ilythea, Haliday.

Ilythea Haliday, Ann. Mag. Nat. Hist., ser. 1, iii. (1839), p. 408.

Two species of this interesting genus were collected, but unfortunately the specimens were not in first-rate condition so that very full descriptions cannot be given.

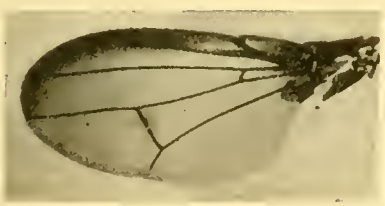

Fig. 10. *Discomyza similis*, n. sp., wing.

Fig. 11. *Ilythea fractivirgata*, n. sp., wing.

22. *Ilythea fractivirgata*, n. sp.

Head. Profile very like *I. spilota* Curtis, except that the back of the head behind and below the eyes is not quite so swollen. Chætotaxy the same but the bristles less strong. Antennæ similar, but the third joint slightly smaller and the five aristal rays proportionately longer. In top view the head is not quite so flattened, and in front view the shining elongate central knob does not extend so far down to the mouth-margin.

The frons is shining, while the face, jowls and lower eye-margins are dusted with grey. The palpi are long, thin and pale with a few bristles near the end; tongue yellow with a bent-back tip.

Thorax. Dorsum and scutellum shining blue-black, slightly dusted: as far as can be seen the chætotaxy is normal, but the bristles are again proportionately weaker.

Wings as in Fig. 11, with remarkable interrupted blackish transverse bands, three in number.

Halters yellow.

Legs all yellow.

Abdomen black and shining, otherwise like that of *I. spilota*.

Size. $1\frac{1}{4}$ mm.

Locality. Seychelles. Mahé: from marshy ground near sea-level at Cascade, 20. II. 1909.

23. *Ilythea invenata*, n. sp.

This species is very close to the last as regards its main characters. The characters of head, thorax, etc. are practically the same, the principal difference being the reddish colour of the facial dusting, the longer scutellar bristles, the more orange-yellow legs with the front coxæ nearly black.

Wings (Fig. 12). These offer a very striking peculiarity inasmuch as the cross veins are absent: the picture on the wings is more like that of the typical species.

Four specimens of this new species are in the Cambridge Collection and were sent by Mr F. Muir from Durban.

Size about $1\frac{1}{4}$ mm.

Locality. Seychelles. Mahé: marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

Fig. 12. *Ilythea invenata*, n. sp., wing.

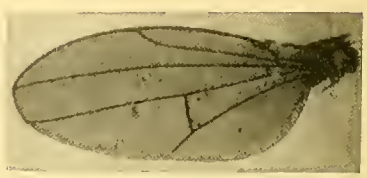

Fig. 13. *Psilopa nitidissima*, n. sp., wing.

Psilopa, Fallén.

Psilopa Fallén, Dipt. Suec., Hydromyz., (1823), p. 7.

24. *Psilopa nitidissima*, n. sp.

This species is very closely related to the Palæarctic species *P. compta* Meigen; it is however much more shining, being brilliant green with coppery or purplish reflections instead of pure green. In the description given comparison is made with *P. compta*.

Head similar in form, chætotaxy etc. including the antennæ, except for being brilliantly shining.

Thorax. Similar; scutellum more swollen at the sides, the flattened part of disc smaller, and the whole somewhat smaller in proportion and more rounded in outline.

Wings (Fig. 13) differ in that the second vein is shorter.

Legs; differ in that the tibiæ are all blackened in the middle.

Abdomen, very shining, the distal part is red-coppery in colour.

Size. 2 mm.

Locality. Seychelles. Mahé: from marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

25. *Psilopa longicornis*, n. sp.

This species is rather aberrant in the genus, but seems best placed there. It is an elongate form with an exceptionally long third antennal joint. Most of the specimens were rather worn, so that slight uncertainty arises in regard to the colours.

Head (Pl. **15**, fig. 16). Frons and vertex greenish brassy with grey pollination, the broad eye-margins more brassy but not truly shining: a well-marked straight lunular suture crosses the frons just above the antenna and extends from one eye-margin to the other. Below this the face is pollinated like the frons. The pollination is frequently rubbed off, when the ground colour beneath is seen to be reddish bronze. Jowls silvery; prelabrum often showing slightly, shiny, and horny in texture. Inside of mouth and the palpi yellow; tongue stout and yellowish grey.

The usual pair of fronto-orbital bristles inserted side by side, strong, the inner pointing backwards the outer forwards; inner and outer verticals; very long ocellars; stout vibrissæ, and the usual stout long bristle on the hind head just below the back of the eye.

Antennæ blackish with yellow tone, the basal joints being somewhat silvery; the curved bristle on the second joint is fairly long but fine; third joint very long, arista long pectinate with eight side rays and one terminal.

Fig. 14. *Psilopa longicornis*, n. sp., wing.

Thorax. Shining greenish with grey pollination; a well-marked more brassy central line, each side of this being well pollinated. The dusting is easily knocked off, and many specimens were bare. One pair of dorso-central bristles, scutellum dusted like the thorax, a pair of terminal bristles and the usual pair near the base are especially long and stout.

Wings (Fig. 14); veins yellow.

Halters, knob whitish and stalk yellow.

Legs yellow with very slightly darkened femora.

Abdomen, dark greenish black, slightly pollinated with the basal part of the dorsum often yellowish in the centre; the whole is covered with stout bristly hairs, longer on the margins of the segments.

Size about 2 mm.

Localities. Seychelles. Mahé: marsh just behind beach at Port Glaud, 5. XI. 1908; marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

ALLOTRICHOMA, Becker.

Allotrichoma Becker, Dipterolog. Studien, iv., Berlin. Ent. Zeitschr., xl. (1895), p. 121.

Some 14 specimens of an insect were collected which seems to be best placed in this genus. The male agrees with Becker's generic characters and possesses peculiar genitalia like those figured by him (*l.c.*, Plate IV, figs. 7, 8). The female is extremely like a *Discocerina* and in both sexes the form and colour bear a strong resemblance to those of a member of that genus.

26. *Allotrichoma argentiprætexta*, n. sp.

Shining black like a *Discocerina*, covered with fine sparse golden pollination.

Head (Pl. **15**, fig. 20). Vertex and frons shining black, no well-marked frontal triangle, in good specimens the pollination is evident. Face rather silvery, with a well-marked silvery line above the mouth extending round the lower eye-margin; prelabrum exserted, shining blackish.

Antennæ black, arista thickened at the base with four side rays, shortening from the base to the tip, and one terminal ray; a well-marked bristle on the second joint.

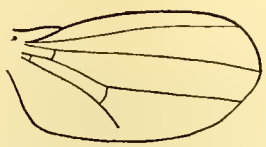

Fig. 15. *Allotrichoma argentiprætexta*, n. sp., wing.

Face with two well-marked side bristles; the usual chætotaxy, backward and forward orbital pair, ocellars, inner and outer verticals, strong forwardly directed post-verticals as strong as the ocellars.

Thorax with fine achrostical and other similar fine bristles each side of them on the dorsum. Scutellum rounded and slightly arched with four bristles.

Wings as Fig. 15 with dark veins.

Halters white.

Legs dark brown with the first joints of the tarsi light brownish yellow, last joints slightly suffused.

Abdomen ♂. Third segment about twice as long as the second; fourth pointed, nearly as long as the previous two; fifth very tiny or drawn beneath. Hypopygium with appendages shaped like small pale flattened strips of nearly uniform width, not spatulate as shown in Becker's paper (*l.c.* Plate IV, fig. 7), two stout divergent hairs on the end and a finer central hair, and a few various sized hairs along the side.

♀. Five segments visible, each a little longer than the previous, the fourth greater than third and third greater than second; rounded visible fifth segment, abdomen covered with fine hairs.

Size (excluding antennæ) about $1\frac{1}{2}$ mm.

Localities. Seychelles. Silhouette: low coconut-planted country near the coast, Pointe Étienne, 17. IX. 1908. Mahé: marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909; near Morne Blanc, about 800 ft., X—XI. 1908; Cascade Estate, about 1000 ft., 1908—9; Anonyme Island, I. 1909.

Hydrellinæ.

HYDRELLIA, Robineau-Desvoidy.

Hydrellia Robineau-Desvoidy, Essai sur les Myodaires, v. (1830), p. 790.

A single species of this genus was found which Mr J. E. Collin informs me belongs to the *griseola* group.

27. *Hydrellia varipes*, n. sp.

A black insect with variegated legs.

Head. Frons, vertex and back of head black, rather shining, slightly brassy. A bright silver lunule over the antennæ. Face closely covered with shining brown-gold pollination with four well-marked fine bristles bordering the eyes. Jowls small, grey as is the lower back of the head, two bristles just below the back lower angle of the eye and a few scattered ones behind it. Palpi yellow, antennæ black with nine side rays and one terminal.

Thorax, shining black with greenish tone: two pairs of dorso-centrals, the front pair very near the cross suture, continued forward by a few small bristles. Achrostical bristles in two rows, fine. Scutellum as thorax, flattened on the disc, two terminal and two basal bristles with two fine side hairs between. Pleuræ and metanotum grey.

Wings normal in venation with brown veins.

Halters, bright yellow knobs with somewhat darkened stalks.

Legs: front, coxæ yellow but slightly darkened at the base in front; trochanters yellow; femora black with extreme tips (at each end) yellow; metatarsus yellowish, other tarsal joints black but just perceptibly spotted with yellow at the extreme distal tip. Other legs as front but coxæ and trochanters slightly suffused and the hind metatarsi brighter yellow.

Abdomen; black, less shining than thorax, bristly, the marginal bristles being especially distinct; segments of nearly equal length.

Size about $1\frac{3}{4}$ mm.

Localities. Seychelles. Mahé: marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909; cultivated and marshy country near sea-level at Cascade, 20. II. 1909; cultivated country about 1000 ft., XI—XII. 1908; near Morne Blanc, about 800 ft., X—XI. 1908.

PHILYGRIA, Stenhammar.

Philygria Stenhammar, Ephydr., (1844), p. 238.

28. *Philygria striata*, n. sp.

A single specimen was captured which is superficially much like a small *P. picta* Fall., with which the species is compared in the description. It has the same two silver thoracic stripes and silvery eye-margins.

The differences are as follows:

Head. The third joint is much smaller, pointed, a little longer than broad, slightly hairy at the top; the aristal rays are much finer and less regular and pale instead of black; the first two-fifths of the arista is very thick and then suddenly thins out for the remainder. The mouth is less prominent; the lower eye-margins are proportionately a little wider. Two vertical bristles and the ocellars present but finer.

Thorax. The silvery stripes are a little wider, and the dorsum of the scutellum is the same colour as the disc of the thorax, not deep dull black: the silvery side spots to the scutellum are present.

Wings; the second vein is longer and all the veins thinner and paler.

Halters like *picta* with long whitish heads.

Legs entirely pale yellow with no infuscation.

Abdomen the same, but the anal half is not quite so shiny and the third segment bears two small dusty spots.

Size. 1 mm.

Locality. Seychelles. Mahé: marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

29. *Philygria* sp. ?

There are two imperfect specimens gummed on card which belong to the *picta* group. It is impossible to give any description owing to the condition of the specimens.

Locality. Seychelles. Mahé: marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

Ephydrinæ.

PARYDRA, Stenhammar.

Parydra Stenhammar, Ephydr., (1844), p. 144.

The single species of this genus is somewhat aberrant in that it has a pointed antenna and teeth on the front femora; in appearance it is nearer to *P. pusilla* Meig., than to the other more normal members of the genus.

30. *Parydra tuberculifera*, n. sp.

Head (Pl. **15**, fig. 18). Frons, vertex and back of head shining black obscured with yellow pollination on the back, slightly so on the eye-margin and above the antennæ. In

top view the head is mainly of excessively shining black which forms an area bounded forwardly by the pollination over the antennæ and sideways by the eye-margins, but extending in a triangular shape from the vertex almost down to the neck where the boundaries are formed by two elongate excessively pollinated patches. The ocelli are nearly in the centre of this shining area. The face and jowls are also shining black with a neatly distributed sparse white pollination; in front view this invades the frons above the antennæ. Hind head swollen as are the eye-margins except just at the centre of the hind margin of the orbits. The sides of the head behind are also well pollinated. Tongue with dark grey chitinous basal part clothed below with fine white silky hairs, the distal part horny, the tip with a few small teeth. Palpi linear, yellow. Antennæ black, the arista thick for the first two-fifths, of the next portion the proximal half is finely pubescent on the top and the distal half is bare; third joint oval with a remarkable pointed tip.

Chætotaxy normal; two fronto-orbital bristles, ocellars, inner and outer verticals; a fine but long bristle projects from each side of the facial eye-orbit and is succeeded by side rows of eight to ten fine hairs along the lower eye-margins; the projecting prelabrum is the same colour as the face.

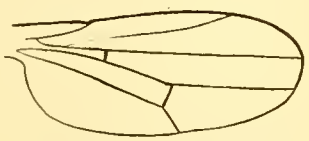

Fig. 16. *Parydra tuberculifera*, n. sp., wing.

Thorax and scutellum shining black with a very neat sparse yellow pollen, two shining patches over the wings and each side of the base of the scutellum. One pair of dorso-central bristles, other bristles normal but the achrosticals very fine and indistinct; pleura grey owing to pollination.

Wings as Fig. 16, finely ciliated all round the margin, thicker on the first costal segment; veins brown; no paler or transparent "windows" or patches present.

Halters orange.

Legs bright orange yellow, except the last tarsal joints which are black and finely haired, the hairs being stronger on the hind tarsi and on the last joint of the other tarsi. Front femora with a row of tubercles starting at the centre (Pl. **15**, fig. 17), where the femur is thickened, and forming a row of blunt saw-teeth from there up to the insertion of the tibia; between the tubercles are fine hairs; middle femora ciliated below.

Abdomen. Shining black with sparse pollination; the margins of the segments paler, yellowish and less shining.

Size about 2 mm.

Locality. Seychelles. Mahé: marshy ground near sea-level at Cascade, 20. II. 1909.

SCATELLA, Robineau-Desvoidy.

Scatella Robineau-Desvoidy, Essai sur les Myodaires, iii. (1830), p. 801.

A single species occurs which is characterised by the seven distinct "windows" on the wing.

31. *Scatella septemfenestrata*, n. sp.

Head. Profile like *S. stagnalis* Fall., but the facial knob is somewhat more prominent. Frons and vertex shining black dusted, two fronto-orbitals; face dusted with grey pollen, a strong bristle each side above the mouth margin. Back of head and jowls black with grey pollen, a strong bristle on the jowl below the eye. Antennæ black.

Thorax densely covered with red-brown pollen; when rubbed the ground is seen to be shining black. Scutellum with two terminal bristles and two side hairs.

Wings as Fig. 17, tinted brownish with seven windows which appear as whitish patches on side illumination, two are between the second and third veins, the distal one being the fainter, three between the third and fourth veins, the distal one being the fainter, the two others lie one each side the cross vein between fourth and fifth. None of these spots are very large nor do they appear to push the veins apart.

Halters pale whitish yellow.

Legs entirely black.

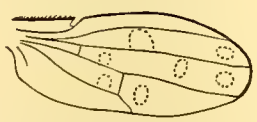

Fig. 17. *Scatella septemfenestrata*, n. sp., wing.

Abdomen. Like the thorax with equal segments.

Size about $1\frac{3}{4}$ mm.

Locality. Seychelles. Mahé: from marsh just behind beach at Port Glaud, 5. XI. 1908.

CANACE, Haliday.

Canace Haliday, Ann. Mag. Nat. Hist., ser. 1, iii. (1839), p. 411.

One specimen of a new species of this interesting genus was collected on the sea-shore of Mahé. It differs considerably from either of the two European species, being nearer to *C. nasica* Hal. than to *C. ranula*.

32. *Canace mahensis*, n. sp. (Pl. **15**, fig. 19).

The insect is of a uniformly dark grey colour, more silvery on the pleuræ and legs and with a silvery face and labrum.

♀. **Head.** In profile longer than high, while in *C. nasica* it is the other way, this is partly due to the smaller jowls. There is a well-marked depressed frontal triangle and a large facial knob just touching the base of the antennæ. Eyes longish oval, with the major axis nearly horizontal, small.

The bristles are as follows: three stout outwardly overhanging fronto-orbital bristles, inner converging verticals and outer somewhat finer verticals, no true post-verticals; an ocellar pair midway between each basal ocellus and the front one; another pair of bristles in front of these, each about midway between the true ocellar bristles and the forward fronto-orbital bristles. The ocelli are unusually wide apart and form an equilateral triangle.

The silvery jowl bears three bristles about equally spaced, the lowest is below about the middle of the eye and half-way down the jowl, and points downwards and forwards, the other hind two point somewhat upwards; on viewing the face in profile the fronto-orbital and jowl bristles converge towards one another to form a sort of cage to protect the eyes. The facial bristle of *C. nasica* is absent. The antennæ are much as in that species, black, with a faintly pubescent arista.

The silvery labrum is visible; tongue large and fleshy.

Thorax. The chætotaxy is as in *C. nasica*, but the four dorso-central bristles and the marginal bristles are proportionately longer and more striking. Otherwise the dorsum is absolutely bare and smooth, contrasting with the bristly dorsum of *C. nasica*. The scutellum has four bristles, the terminal ones directed upwards, the two basal ones backwards, but it lacks the small dorsal pairs. The pleural bristles are destroyed by the pinning of the specimen.

Wings and halters as *C. nasica*.

Legs: front femora have a row of five fine long bristles, and the middle and hind femora are slightly spiny in front; hind femora in no way thickened.

Abdomen. Narrow and long but segmented as in *C. nasica*; two processes on the dorsal side for holding the egg as shown in the figure. The preceding segment has the pair of long bristles.

Size about $1\frac{3}{4}$ mm.

Locality. Seychelles. Mahé: from seaweed on beach at Long Island, VII. 1908. A second badly preserved specimen is among some material from Coetivy.

Chloropidae. Chloropinae.

Ops, Becker.*

Ops Becker, Ann. Mus. Nat. Hung., viii. (1910), p. 402.

33. *Ops glaberrima*, n. sp. (Pl. **16**, figs. 1—4).

♂, ♀. This species must be near *Chloropisca callichroma* Loëw from Africa, but differs therefrom in several essential points.

Head (Pl. **16**, figs. 1, 2). The frons and face are of equal width, the eye-margins being parallel and equidistant from the vertex to the mouth. The vertex and frons are bright yellow with a small black shining vertical spot. The vertical "triangle" (Pl. **16**, fig. 2) is very shining and extends from the vertex (where it nearly fills the space from

* This name is preoccupied in the Lycaenidae; see de Nicéville, Journ. Bombay Nat. Hist. Soc., vol. ix. 1895, p. 296.

eye to eye) to close up to the base of the antennæ: the front edge terminates in a slightly curved line which covers one-third of the frontal breadth; the side margins are slightly concave.

Note. When the specimen is shrivelled the shape of the frons etc. has a somewhat different appearance: the central strip of the frons is more strongly chitinized than the spaces between it and the eyes; on drying this central strip falls in and drags the side strips down with it so that the frons appears to be deeply furrowed; the bottom of the furrow being the central strip, the side strips now form roughly perpendicular boundaries of the furrow. When this occurs the eye-margins no longer appear parallel throughout.

The face is yellow slightly dusted with silver, with two very shallow antennal foveæ: the mouth opening when viewed perpendicularly to its plane is trapezoidal in outline; the upper lip is pale, the sides of the mouth edge are margined with a fine brown line; palpi and tongue reddish brown.

Antennæ reddish yellow with a brown slightly pubescent arista.

Back of head black with a broad yellow margin all round; jowls very small.

Thorax (Pl. **16**, fig. 3). Dorsum shining black with a somewhat irregular contour, having a nick at the cross suture, and a slightly wavy and less sharply defined hind margin. The black central part is bordered with bright yellow; pleura yellow with a reddish linear spot just behind the cross suture and an elongated black spot on the same.

Fig. 18. *Ops glaberrima*, n. sp., wing.

Scutellum in the form of a nearly equilateral triangle with rounded angles: very flattened on the dorsum; a pair of short black converging terminal bristles; metanotum shining black.

Wings (Fig. 18): venation normal, the distal part of the fourth vein being much less distinct than the other veins; extreme base of costa blackish and slightly swollen.

Halters with bright canary yellow knobs, stalks blackened beneath.

Legs pale yellow including the tarsi, which have minute black claws.

Abdomen. First and second segments reddish yellow, the latter with the usual two tiny black spots on the extreme margin, sides paler. The third shining black including the sides to the belly. Fourth yellowish with a broad black stripe interrupted in the centre, the breadth of stripe and interruption varying somewhat in different specimens. Fifth yellow with two elongate black basal side spots, the remainder being pale yellow.

Size. 2 to $2\frac{1}{2}$ mm.

Localities. Seychelles. Mahé: Cascade Estate, about 800 ft., 1909; near Morne Blanc, X.—XI. 1908; swept from rank vegetation in marshes on coastal plain at Anse Royale, I. 1909.

Var. *dentata*, n. var. A pale variety (or sub-species) occurs in which the thoracic black dorsal mark extends less far behind and appears like a central mark with two backwardly directed side lobes (Pl. **16**, fig. 4). The abdomen is wholly devoid of black marks, the basal part being reddish yellow, the rest pale yellow.

Localities. Seychelles. Mahé: Cascade Estate, about 800 ft., 1909; marshes on coastal plain, Anse Royale, I. 1909.

Oscininæ.

Gampsocera, Schiner.

Gampsocera Schiner, Wien. Ent. Monatschr., vi. (1862), p. 431.

A single specimen of an insect was obtained which seems best placed in this genus. The specimen agrees with Schiner's generic characters with the exception of the shape of the scutellum: Schiner's description says, "Rückenschild flach gewölbt, am Rande beborstet, Schildchen verhältnissmässig klein." Becker (Archivum Zoologicum, Vol. i. no. 10, p. 117) defines the genus and figures the head of *G. scutellata* Heeger; he describes the scutellum as "halbkreisformig." The present specimen agrees with his figure as to the shape of the head and antennæ, but the scutellum is elongate as shown in Pl. **16**, fig. 5. In other respects the agreement with the published generic character is close.

34. *Gampsocera scutellata*, n. sp.

♂. **Head.** The shape is very like Becker's figure (*l.c.* Plate III, fig. 68) but the hairy eyes are not rounded at the lower inner edge, the margin being there angulated. Frons black; the triangle large, shining black, the base nearly filling the space between the eyes; it extends to the base of the antennæ. The antennæ have the third joint less pointed than in Becker's figure (*l.c.* Plate III, fig. 69), being more nearly kidney-shaped: the second and third joints are yellow. The black apical arista is flattened in section and very densely pilose, its two joints being quite distinct, the last ends in a distinct though fine terminal bristle. The proboscis and palpi of the single specimen are completely retracted.

Thorax (Pl. **16**, fig. 5). Shining black on the dorsum and pleuræ. The former is finely punctate and clothed with delicate white hairs; there are no dorsal bristles. The scutellum has a blunt-pointed triangular outline (Pl. **16**, fig. 5) and is strongly arched and more coarsely punctate than the thorax. It is black with two strong divergent terminal bristles: the dorsum and sides have small white bristly hairs.

Wings immaculate, yellow at their insertion; the venation is as figured by Becker (*l.c.* Plate III, fig. 70), except that the second vein bends more sharply up to the costa which it meets about midway between the ends of the first and third veins.

Halters yellow.

Legs entirely pale yellow.

Abdomen. Basal part orange-yellow, the rest (including the venter) shining black.

Size. $1\frac{1}{2}$ mm. exclusive of antennæ.

Locality. Seychelles. Mahé: marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

Anatrichus, Loew.

Anatrichus Loëw, Öfvers. Kongl. Vet. Akad. Förhandl., xvii. Dipt. (1860), p. 97.

35. *Anatrichus arenaceus* Loëw, *l.c.* 97. 13.

This insect has a wide distribution in Africa; it is known from South Africa, Egypt, the Chirinda forest, etc.

Locality. Seychelles. Mahé: the collection contains six specimens from the marshes on the coastal plains of Anse aux Pins and Anse Royale, I. 1909.

Meroscinis, De Meijere.

Meroscinis De Meijere, Tijdschr. voor Entom., li. (1908), p. 172, Pl. **4**, fig. 14.

This genus was established by De Meijere for a Chloropid from Semarang, Batavia. Becker records two species from Africa in the Ann. Nat. Mus. Hung. (1910). There are two species from the Seychelles which can be referred to this genus.

36. *Meroscinis æneifrons*, n. sp.

The colour is uniformly shining black except that the first two or three tarsal joints are bright yellow and that the third antennal joint is very slightly rufous, especially on the inner side.

Head (Pl. **16**, figs. 6, 7). The vertical triangle is large, shining metallic blue; it extends to the front antennal margin where it is abruptly cut off (Pl. **16**, fig. 7). The fronto-orbital bristles are strongly developed, and there is an inner row of strong bristles bordering the shining vertical triangle. The former are slightly bent backwards, the latter forwards and arching inwards towards one another. The post-ocellar pair are crossed; the outer vertical pair strongly developed. The mouth-margin is bristled.

Antennæ with an orbicular third joint with a strongly pubescent brownish-black arista.

Eyes bare.

Tongue and palpi black.

Thorax. Shining black, finely punctate and covered with short pale hairs: the single post-alar bristle is fairly strong, the others very small or absent. Pleura shining black and slightly rugose. Scutellum shining greenish-black, more densely punctate than the thorax, the punctation being coarser: it is also covered with pale silky hairs; two long terminal bristles, much divergent and about as long as the scutellum.

Wings with venation as shown in Fig. 19: glassy with black veins.

Halters with black heads but yellowish stalks.

Legs black except for very indistinctly paler knees, the first two joints of the front tarsi and the first three joints of the middle and hind tarsi which are yellow.

Abdomen. Entirely shining black with black hairs.

Size. 2 to 2½ mm.

Localities. Seychelles. Silhouette: Mare aux Cochons, plateau and forest above, VIII.—IX. 1908. Mahé: Cascade Estate, about 1000 feet, 1908—9.

37. *Meroscinis rugosa*, n. sp.

This differs from the last species as follows:

Head (Pl. **16**, fig. 8). The shining triangle is not so strongly blue and is pointed at the end. The antennal joints are bright yellow-red with the arista paler and finely pubescent.

Thorax. The punctation of both thorax and scutellum is coarser, that of the latter being unusually coarse: the scutellum has a purplish tone of colour and a blunter tip; there are four scutellar bristles, the terminal pair being situated on small but noticeable papillæ, the two smaller side ones being also on papillæ which are, however, smaller.

Fig. 19. *Meroscinis æneifrons*, n. sp., wing.

Wings with pale veins.

All the legs have yellow trochanters, black femora with yellow knees, yellow tibiæ with a broad black or blackish ring round the middle, and entirely yellow tarsi.

Size as last species.

Localities. Seychelles. Mahé: Cascade Estate, about 1000 feet; marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

Hippelates, Loew.

Hippelates Loew, Berlin. Ent. Zeitschr., vii. (1863), p. 36.

This genus was founded by Loëw for certain American forms. Becker has described one from Madeira (Archiv. Zool., i. 150), and De Meijere one from Java. Five species occur in the Seychelles, one of which agrees with a published description.

38. *Hippelates nigricornis* Thomson, Eugenies Resa, p. 607.

Described from Ins. Rossi.

Locality. Seychelles. Mahé: Anonyme Island, I. 1909.

39. *Hippelates stigmatica*, n. sp.

This is the smallest of the five species and must be nearly related to *H. minor* De Meijere (Tijd. voor Entom. li. 168). The latter has black thoracic stripes and entirely yellow legs, while the present species has brownish stripes and the whole of the front tarsi and last joints of mid and hind tarsi black. It possesses the pleural spot of *H. minor*.

♂♀. **Head.** Entirely yellow except for a round black spot on which the ocelli stand; the frontal triangle is concolorous with the rest of the frons but is much more shining, its base almost fills up the space between the eyes and its point extends to about halfway between the vertex and the antennal bases. Antennæ yellow with a slightly pubescent black arista. Orbital bristles (1 + 3), inner and outer verticals, crossed post-verticals; a row of bristles along each side of the frontal triangle directed forward and inward; small vibrissæ present. Jowls about one-fourth depth of eye. Tongue and palpi yellow.

Thorax. Yellow-brown; in well-marked specimens there are four longitudinal stripes of darker brown which do not meet either the front or the hind borders of the dorsum; these lines vary somewhat in breadth and in some cases are confluent, especially

Fig. 20. *Hippelates stigmatica*, n. sp., wing.

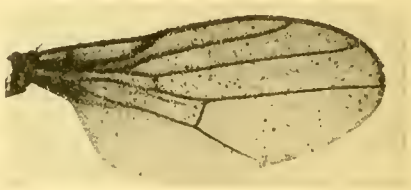

Fig. 21. *Hippelates longiseta*, n. sp., wing.

in the case of the central pair. The last pair of dorso-central bristles are present, but the bristles are easily damaged. Pleura with a shining black spot. Scutellum pale yellow with two terminal and a few side and discal bristles. Metanotum shining black.

Wings, as in Fig. 20, hairy with yellow veins.

Halters pale whitish-yellow with yellow stalks.

Legs yellow with darkened tip to tibiæ and darkened tarsi in first pair; last two joints of tarsi black in other pairs, the tibial spurs of the hind legs are small.

Abdomen. Brownish-yellow: the ovipositor shining black.

Size. About $1\frac{3}{4}$ mm.

Localities. Seychelles. Mahé: from near Morne Blanc, about 800 feet, X.—XI. 1908; Port Victoria, XII. 1908; marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909; Anonyme Island, I. 1909.

40. *Hippelates longiseta*, n. sp.

This is a very interesting form in which the tibial spurs are greatly developed, and the male possesses a pair of very long fine bristles on the tongue. All the bristles on the insect are pale.

♂, ♀. **Head** (Pl. **16**, fig. 9). Yellow with a small black ocellar dot; frontal triangle pale shining yellow with its base nearly reaching from eye to eye and its point extending very nearly to the antennæ; face, palpi and tongue yellow. Eyes slightly pubescent. Fronto-orbital bristles (1 + 3), outer and inner verticals the former divergent, crossed post-verticals, strongly crossed ocellars, a row of fine inwardly convergent bristles parallel to but slightly removed from the sides of the frontal triangle. Antennæ pale with a large third joint, a brown pubescent arista, and a strong bristle on the top edge of the second joint.

Tongue yellow: in the male it possesses a pair of long fine pale setæ as shown in fig. 9, the female is devoid of these setæ.

Palpi yellow.

Thorax. Dorsum yellowish red: in some cases a pair of brownish red lines run from the last pair of dorso-central bristles (the only pair present) to just behind the humeral calli; these lines vary in intensity in different specimens. The dorsum is covered with pale hairs. Pleura pale yellow; when the insect is viewed perpendicular to its dorsal plane the pleural bristles stand out as long though fine. Scutellum flattened, pale yellow, covered with hairs; four scutellar bristles the end ones long and crossed at the tip.

Wings as Fig. 21; veins pale.

Halters yellow.

Legs all pale yellow. The hind pair are long and the terminal tibial spur is very black and long, being nearly equal in length to the metatarsus.

Abdomen yellow.

Size. $2\frac{1}{4}$ mm.

Localities. Seychelles. Mahé: Cascade Estate, about 1000 ft., 1908—9; Anonyme Island, I. 1909. Amirantes: Eagle Island, 17. X. 1905. Cargados Islands: Establishment Island, 28. VIII. 1905.

41. *Hippelates nigrescens*, n. sp.

This species is similar to the last in form, venation, etc.; it differs as follows:

All the bristles are black.

Head. Blackish brown, yellow just above the antennæ. Antennæ nearly black. Lower eye-margins silvery. Frontal triangle black and shining, reaching to about two-thirds way down to the antennæ. Eyes very hairy. Tongue devoid of setæ in the male.

Thorax with dorsum dark brown, the scutellum yellow. Wings with pale veins. Legs similar to last species but slightly stouter, also with large tibial spurs.

Abdomen black.

Size. $2\frac{1}{2}$ mm.

Locality. Seychelles. Mahé: scrubby forest vegetation on summit of Mount Sebert, 1800 ft. or more, I. 1909.

42. *Hippelates femorata*, n. sp.

A single specimen labelled "Astove 1907 (H. P. Thomasset)" differs considerably from the above; it has distinctly incrassated hind femora. The specimen is gummed on a card and hence cannot be fully described; it is so distinct that no difficulty should arise in identification.

♀. **Head.** Frons yellow with black shining triangle; hind head completely black but interrupted on the line of the vertex by two yellow spots one each side of the ocelli. Bristles as in *H. longiseta*, but the crossed post-vertical pair are exceptionally strong.

Eyes bare.

Antennæ brownish but no detail can be given as they are buried in the gum.

Thorax. Dorsum black with the central part yellowish the yellow part extending from about the cross suture to the scutellum. The humeri are swollen and yellow with a small brown dot in the centre of each. Pleura yellow. Scutellum black, flattened, punctate, with two long convergent black terminal bristles.

Wing very like Fig. 21.

Halters yellow.

Legs: front and middle yellow but the details are hidden by the gum; hind legs, femora with proximal third yellow, distal two-thirds black, incrassated; tibiæ, black flattened broadening from each end, on the inner face about the middle is a pale grey spot apparently covered with dust; the tibial spine is black and stout about as long as the metatarsus; the tarsi brownish black the joints being rather stout, especially the metatarsus which is fringed inside with a close row of pale hairs.

Abdomen, black, yellowish at the base with narrow yellow margins to the segments.

Size. 2½ mm.

Locality. Astove Island: 1907 (Thomasset).

Gaurax, Loew.

Gaurax Loew, Berlin. Ent. Zeitschr., vii. (1863), p. 35.

A pair of specimens seem to be best placed in this genus. Loew in his definition of the genus says "setâ subterminali plumatâ." The present insect agrees substantially with his generic description except that the arista is distinctly dorsal. Zetterstedt's *Oscinis ephippium* is now considered to belong to this genus, though the arista can scarcely be considered subterminal. Pending a revision of the species it appears best to place the present insect in the genus.

43. *Gaurax seychellensis*, n. sp.

♂, ♀. **Head** (Pl. **16**, fig. 10). Vertex and frons brownish yellow, but pale yellow from the tip of the frontal triangle to the antennæ; frontal triangle dull black with its base not extending to the eye-margins and with the front angle rounded and extending nearly half way to the base of the antennæ, the triangle is bordered each side by a row of pale hairs.

Face, palpi and tongue reddish yellow, the palpi being stout, fleshy and slightly compressed laterally.

Eyes large, closely but finely haired.

Jowls silvery below the eyes then yellow. A row of fine fronto-orbital bristles extending from the vertex to the antennæ, outer vertical pair, post-verticals, parallel pair of ocellars.

Antennæ reddish yellow with a large circular discal third joint and black pubescent arista which is inserted about the middle of the upper side of the third joint.

Thorax. Dorsum brownish black, shining, but obscured with slight pollination and yellow pubescence. Humerus yellow; a yellowish spot each side of the base of the scutellum. A small pair of prescutellar bristles. Scutellum rounded, yellow, hairy with two terminal bristles and three marginal ones each side. Pleura shining yellowish with shining blackish spots just above the middle coxa and the base of the wings. Metanotum shining black.

Wings much as in *Gaurax ephippium* but proportionately broader, the third vein is very slightly bowed instead of being straight.

Fig. 22. *Siphunculina signata* Rond., wing.

Halters and their stalks pale yellow.

Legs pale yellow except for blackened tips to all the femora and a broad blackened ring on the hind tibiæ.

Abdomen blackish brown, the basal part of the dorsal surface and the venter paler. The female has a well developed soft ovipositor.

Size about $1\frac{3}{4}$ mm.

Localities. Seychelles. Silhouette: Mare aux Cochons, IX. 1908. Mahé: Cascade Estate, about 1000 ft., 1909.

SIPHUNCULINA, Rondani.

Siphunculina Rondani, Prodr., i. (1856), p. 128.

44. *Siphunculina signata* (Wollaston), Ann. Mag. Nat. Hist., ser. 3, i. (1858), p. 117, Pl. V, fig. 8 [*Oscinis*].

This insect was described and figured by Wollaston from Madeira. Specimens in the collection agree well with this description and also with that of Becker in the Archiv. Zool., i. (No. 10), p. 132.

The wing is figured (Fig. 22), as Wollaston's figure is not very clear.

Locality. Cargados Islands: Establishment Island and Siren Island, 27—28. VIII. 1905.

NOTONAULAX, Becker.

Notonaulax Becker, Mitt. Zool. Mus. Berlin, ii., p. 153.

45. *Notonaulax trisulcata*, n. sp.

♂, ♀. **Head.** Frons brownish black with a brown antennal margin; quite dull except for a somewhat shining arched line from the ocelli to the eye-margins and an abbreviated pointed mid-line down the small frontal triangle from the ocelli. Face, jowls and palpi yellowish brown; mouth margin and tongue shining black. Eyes pubescent. Antennæ with the second joint concolorous with the margin of the frons, the third joint much blackened, arista black and slightly pubescent.

Thorax. Dorsum shining blackish brown, finely haired, slightly dusted, with three deep sulci; the central sulcus is punctate in one uniform row, the side sulci are more widely punctate, the basal part having two rows of punctures side by side; these side sulci increase in breadth from about the level of the cross suture. Pleura same colour as dorsum. Scutellum triangular, slightly flattened, same colour as the thorax, with black hairs:

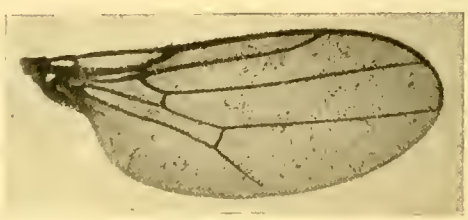

Fig. 23. *Notonaulax trisulcata*, n. sp., wing.

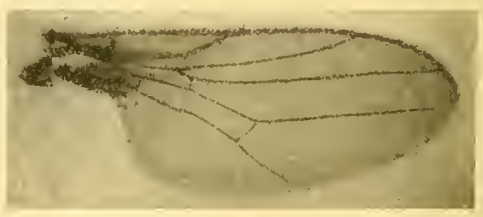

Fig. 24. *Oscinis dissimilicornis*, n. sp., wing.

a deep cross groove demarcates it from the rest of the thorax; there are about three short stout marginal bristles on each side, which gradually decrease in size towards the base, and a crossed terminal pair.

Wings (Fig. 23) with dark brown veins.

Halters yellow.

Legs yellow with slightly infuscate hind femora; the hind tibiæ have on the upper side a peculiar dusty "brand" on the middle line like that mentioned in *H. femorata*; it is situated on about the middle third.

Abdomen, either concolorous with the thorax or somewhat lighter at the base; it is clothed with fairly long hairs.

Size. $2\frac{1}{4}$ mm.

Localities. Seychelles. Silhouette: high forest, 2000 ft., VIII.—IX. 1908; Mare aux Cochons and forest above, IX. 1908. Mahé: from near Morne Blanc, about 800 ft., X.—XI. 1908; high forest of Morne Blanc and Pilot, X.—XI. 1908; Morne Seychellois, over 1500 ft., 4. II. 1909; Mare aux Cochons district, 1500—2000 ft., I.—II. 1909; Cascade Estate, about 1000 ft., 1909.

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Oscinis, Latreille.

Oscinis Latreille, Hist. Nat. Ins. et Crust., xiv. (1804), p. 385.

46. *Oscinis dissimilicornis*, n. sp.

This species has different coloured antennæ in the two sexes. This occurs also in *O. dimorpha* Osten-Sacken as described in "Diptera from the Philippine Islands," Berlin. Ent. Zeitschr., xxvi. (1882), p. 245. The present species differs in several respects; the head is pale, the wings non-infuscate, the hind femora and tibiæ are black instead of brown, the size is about $1\frac{1}{2}$ mm. instead of from $2\frac{1}{2}$ to 3. They must be somewhat related forms.

♂. **Head.** Frons yellow, dull; the frontal triangle is dull greyish-black with a broad base extending from eye to eye and a rounded front margin; it extends to about one-third of the distance from the vertex to the base of the antennæ. Three pairs of fine upper fronto-orbital bristles, outer orbital bristles short but stout and slightly converging post-verticals, parallel upright ocellars one each side of the front ocellus. The rounded front margin of the frontal triangle has small bristles, and the frons is also provided with small bristles. Face whitish with small vibrissæ; jowls pale yellow, a little less than one-third the vertical height of the eye; posterior eye-margins grey; back of head black.

Eyes oval, microscopically (× 16) pubescent.

Antennæ all yellow, arista black with slightly thickened basal joint, the rest being very finely pubescent.

Tongue black and chitinous.

Palpi yellow.

Thorax and scutellum dullish black with greyish yellow pollination and very short bristly hairs on the dorsum of both; the last dorso-central bristles present, two parallel terminal scutellar bristles and two shorter side ones. Pleura same colour as thorax; metanotum shining black.

Wings (Fig. 24) in no way infuscate, veins brown.

Halters with a rather elongate whitish head and pale yellow stalk.

Legs: front with yellow coxæ, infuscate femora, the rest yellow; middle with infuscate coxæ and femora, the rest pale; hind also with infuscate coxæ and femora, the tibiæ generally infuscate basally.

Abdomen blackish, slightly shining and slightly paler at the base.

♀ differs in that the second and third antennal joints are black.

Size. $1\frac{3}{4}$ mm.

Localities. Seychelles. Mahé: marsh just behind beach at Port Glaud, 5. XI. 1908; marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

47. *Oscinis acuticornis*, n. sp.

This is the smallest species; it is entirely more or less shining black except for its paler legs and yellow halters, and can be at once recognised from its small size and the pointed tip to the large third antennal joint.

Head (Pl. **16**, fig. 11). The frontal triangle is shiny black and practically covers the whole frons from the vertex to the rounded front margin just above the antennæ, leaving only the eye-margins free. The face is deeply pitted between the eyes and below the lunula, and the antennæ are partly sunk in this pit. Below the pit the face is seen to project when viewed in profile. Antennæ black with a large hairy third joint ending in a small spike which is partly formed by a terminal thorn; arista blackish, stout and pubescent (× 45), second joint with a hair. Eyes microscopically pubescent.

The specimens are not in good condition but it is possible to see a fine fronto-orbital row of bristles, crossed post-verticals and upright ocellars. Jowls about one-sixth of the height of the eye.

Thorax sparsely clothed with fine bristles, the last pair of dorso-centrals present. Scutellum slightly brassy with a rounded tip and two terminal bristles.

Wings (Fig. 25), veins dark brown.

Halters pale yellow.

Legs pale brown with darker femora.

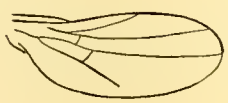


Fig. 25. *Oscinis acuticornis*, n. sp., wing.

Abdomen duller black than thorax.

Size about $\frac{3}{4}$ mm.

Locality. Seychelles. Mahé: marshy ground near sea-level at Cascade, 20. II. 1909.

The following four species form a group of very similar species which are allied to *O. atricornis* Zett., and differ from the normal forms of the genus in their more slender shape. They are shining black in colour and with wings whose length is in general unusually great relative to the body length. They are somewhat variable in colour of the legs and in the relative breadth and length of the wings. This is noticeably the case in the first species (*O. oculata*) in which specimens occur which are exactly similar in all the important characters except that the wings (in the extreme cases) may vary between the forms given in Figs. 26 and 27. It is possible that further knowledge of the habits and food plants may enable the species to be more accurately subdivided.

48. *Oscinis oculata*, n. sp.

♂, ♀. **Head** (Pl. **16**, figs. 12, 13). Frons black with a large shining frontal triangle (fig. 20), the base occupies very nearly the full space from eye to eye at the vertex, the

sides are slightly convex, and the rounded apex extends nearly to the base of the antennæ: two side triangles are thus formed between the eye-margins and the triangle which are duller than the central triangle and slightly purplish in colour. Five fronto-orbital bristles, one vertical, crossed post-verticals, parallel ocellars. The face below the antennæ and right up to the mouth margin is deeply recessed, the bottom of this pit or recess is paler than the rest and is sometimes quite yellowish. The mouth margin and hind head are shining black. The large sparsely pubescent eyes occupy nearly the whole of the head in side view (Pl. **16**, fig. 12). The mouth margin is finely bristled, the bristles being of nearly equal size. Tongue, black, horny with a backwardly bent yellowish tip. Palpi black or blackish.

The antennæ are black, the third joint large, orbicular and pubescent; arista black and strongly pubescent.

Thorax. Very shining black with fairly long bristly hairs on the dorsum, bent backwards, the last dorso-centrals present. Scutellum also shiny black with two end bristles situated a little dorsally of the rounded margin. Metanotum black and very shining.

Fig. 26. *Oscinis oculata*, n. sp., wing.

Fig. 27. *Oscinis oculata*, n. sp., var., wing.

Wings: the normal form is as shown in Fig. 26, the axillary lobe being well developed and the wing of normal outline. The second vein is always gently bent up to the costa, the third and fourth veins are quite parallel in their distal portions. In other specimens (which are in other respects indistinguishable) the wings are different in form. In some the wings are of the shape given in Fig. 26, but are proportionately shorter; while the normal wing has its length about 2·4 times the maximum breadth, in the present case the ratio falls below 2·3: this form has usually slightly darker legs than the typical form. A more extreme form occurs in which the shape of the wing is altered, as shown in Fig. 27: the axillary lobe is smaller, and the wing is more "bat" shaped; the above ratio has here a value of 3 to 1. All the forms occur together, and are more or less connected by intermediates. It is possible that the form figured in Fig. 27 is a distinct species, although in other respects it is practically identical with the normal type. The veins are brownish.

Halters pale.

The legs are also slightly variable in colour; in most cases they are yellow with various degrees of infuscation. The commonest form is as follows: front legs (including coxæ) yellow; middle legs, coxæ black, femora very slightly infuscate on the distal half

or two-thirds, tibiæ and tarsi yellow; hind legs, coxæ black, femora slightly infuscate, tibiæ with an infuscate ring, tarsi yellow. In some specimens the infuscation is confined to the ring on the hind tibiæ, and more rarely the legs are entirely yellow.

Abdomen. Shining black, sometimes paler at the base; venter pale.

Size. $1\frac{3}{4}$ to 2 mm.

Localities. Seychelles. Silhouette: high forest, 2000 ft.; near Mont Pot-à-eau, about 1500 ft., VIII. 1908; Mare aux Cochons plateau and forest above, VIII.—IX. 1908; low coconut-planted country near coast, Pointe Étienne, 17. IX. 1908. Mahé: near Morne Blanc, about 800 ft., X.—XI. 1908; high forest of Morne Blanc and Pilot, X.—XI. 1908; Cascade Estate, about 1000 ft., and forest above up to 2000 ft., 1908—9; Mare aux Cochons district, 1500—2000 ft., I.—II. 1909; Morne Seychellois, over 1500 ft., 4. II. 1909. Praslin: Côtes d'Or Estate, X. 1908.

49. *Oscinis longipennis*, n. sp.

This species is like the European *O. atricornis* Zett.

Fig. 28. *Oscinis longipennis*, n. sp., wing.

♂, ♀. **Head** (Pl. **16**, figs. 14, 15). Frons dull rufous black with a very shining frontal triangle which is less broad at the base than in the last species (Pl. **16**, fig. 13) and has a somewhat pointed apex which does not quite reach the antennæ. Five fronto-orbital bristles, two verticals each side, crossed post-verticals, convergent ocellars; the frontal triangle with well marked bordering bristles. Face in profile more retreating than in last species (fig. 23), with a long pit-like furrow in the centre which is yellowish at the bottom. Mouth margin shining black with bordering bristles, the upper pair of which are longer and form vibrissæ. Hind head shining black, lower eye-margins dull. Tongue and palpi blackish.

Eyes microscopically pubescent.

Antennæ black, third joint orbicular, arista black and pubescent, second joint slightly paler.

Thorax and scutellum as the last species.

Wings as Fig. 28: the second vein is straight almost to the end where it suddenly turns up to the costa; the third and fourth veins slightly and continuously divergent. The wings are exceptionally long and ample and extend far beyond the tip of the body: they are slightly suffused with brown and have brown veins.

Halters yellow.

Legs entirely yellow except the middle and hind coxæ and occasionally a slight infuscation on the hind tibiæ.

Abdomen. Black, sometimes a little paler at the base. ♀ with a short fine ovipositor.

Size about 2 mm.

Localities. Seychelles. Silhouette: highest forest, 2000 ft.; near Mont Pot-à-eau, about 1500 ft., VIII. 1908; Mare aux Cochons and forest above, IX. 1908. Mahé: high forest of Morne Blanc and Pilot, X.—XI. 1908: Mare aux Cochons district, 1500—2000 ft., I.—II. 1909; Cascade Estate, about 1000 ft., 1908—9.

50. *Oscinis halterata*, n. sp.

This species is similar in form of venation to *O. longipennis*: it is also entirely shining black.

Head (Pl. **16**, figs. 16, 17). Somewhat as *O. oculata* but the jowls are just visible in profile; they are grey in colour. The antennæ are not deep black, but very dark brownish or reddish black, and reddish on the inner faces.

Thorax. Scutellum and wings as in *O. longipennis*, but the cross veins are nearer together and the wings are slightly shorter.

Halters black.

Legs yellow with all the femora and the middle and hind tibiæ slightly darkened.

Abdomen. Shorter and dark haired. ♀ with a long ovipositor.

Size about $1\frac{1}{2}$ mm.

Localities. Seychelles. Mahé: marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909; Anonyme Island, I. 1909.

51. *Oscinis varicornis*, n. sp.

Two specimens can be referred to another species. In the characters of thorax, wings, legs and abdomen it is like *O. longipennis* except that the wings are slightly shorter in proportion and the halters are infuscate and not clear yellow. The chief differences are in the head.

Head (Pl. **16**, fig. 18). Side view as figured, well marked jowls being present and the mouth margin slightly projecting. The frontal triangle is much as in *O. longipennis*, the eye-margins black and shiny; the facial pit is less deep and slightly wider.

The third joint of the antennæ is red on the lower half and black on the upper, the arista is perceptibly pale at the extreme base.

In other respects the insect is very like *O. longipennis*, but the legs are clear orange yellow.

Size. $2\frac{1}{4}$ mm.

Localities. Seychelles. Mahé: country above Port Glaud, 500—800 ft., 5. XI. 1908; marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

Agromyzidae.

AGROMYZA, Fallén.

Agromyza Fallén, Dipt. Suec., Agromyz., iii. (1823), p. .

52. *Agromyza pubicornis*, n. sp.

This species is one of the relatively longer and more parallel forms; in shape it resembles a small *A. capitata*.

Head (Pl. **16**, fig. 19). Frons dull yellow with a black somewhat shining ocellar spot; the lunula is sunk into the frons leaving somewhat projecting yellow eye-margins, it extends from the base of the antennæ nearly half way back to the ocellar spot and is grey in colour, the upper rounded edge being somewhat silvery. Face, tongue, palpi, jowls and margins behind eyes yellow; back of head black; the jowls project somewhat and there are well marked vibrissæ.

Antennæ; first two joints yellow, the third greyish but yellow inside near the base, second joint with a fine bristle; arista somewhat thickened especially at the base which is yellow the rest being darkened, the pubescence is well marked, stout and close set.

Fig. 29. *Agromyza pubicornis*, n. sp., wing.

Four fronto-orbital bristles, lower two fine and pointing inwards, upper two stouter and pointing outwards; stout inner verticals nearly parallel, finer outer verticals; ocellars parallel and forwardly directed; post-verticals divergent.

Thorax. Dorsum and pleuræ slightly shining black (1 + 3), rather unequal dorso-central bristles; achrostical bristles in four well marked rows. Scutellum black and somewhat pointed with four long and nearly equal bristles, the terminal pair fairly close together, the other pair near the base and somewhat remote from the margin.

Wings as Fig. 29, glassy with brown veins.

Halters bright yellow.

Legs yellow with slightly infuscate tibiæ and tarsi.

Abdomen somewhat shining black with approximately equal segments, covered dorsally with short bristles.

Size. $1\frac{4}{5}$ mm.

Localities. Seychelles. Mahé: marshy ground near sea-level at Cascade, 20. II. 1909; marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909.

The following species are more rounded in form, resembling *A. æneiventris*, Fallén.

53. *Agromyza funebris*, n. sp.

Two specimens were collected of this species which is entirely somewhat dull black in colour.

Head (Pl. **16**, fig. 20). Frons dull brown black; a well marked frontal triangle, and broad eye-margins separated from the rest of the frons by a browner space. The fronto-orbital bristles stand on small shining spots. Face with the base of the antennæ rather sunk in, so that the first joint of the latter is hidden. Antennæ black with a very small thick third joint and pubescent arista. Jowls very narrow, mouth margin slightly prominent; vibrissæ small.

Four fronto-orbital bristles which do not converge, inner and outer verticals of about the same length; parallel ocellars, divergent post-verticals.

Thorax. Subquadrate, apparently with only two dorso-central bristles and many irregular achrostical bristles. Scutellum rounded in outline with four bristles.

Wings glassy with brown veins; the veins as in Fig. 30, where the basal part is left out as it could not be properly seen.

Halters black.

Legs all black.

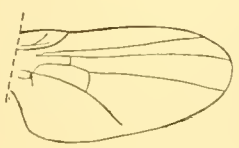


Fig. 30. *Agromyza funebris*, n. sp., wing.

Abdomen all black clothed with short bristles.

Size. $1\frac{1}{3}$ mm.

Localities. Seychelles. Silhouette: near Mont Pot-à-eau, about 1500 ft., VIII. 1908. Mahé: Cascade Estate, about 1000 ft.

54. *Agromyza candidipennis*, n. sp.

This is an entirely shining black insect with markedly milky wings.

Head (Pl. **16**, fig. 21). Vertex and frons entirely black, rather shining; the frontal triangle more shining with its base about one-half the distance between the eyes, with a pointed end, the sides slightly concave, it extends about two-thirds of the way from the vertex to the boundary of the lunula. The lunula is roughly semicircular in outline. Eye-margins shining like the frontal triangle. Face black, sunk in from the lunula to the mouth-margin so that in profile the base of the antennæ is hidden. Palpi short and stout, somewhat swollen; tongue brownish.

Eyes large, bare.

Antennæ black, second joint with a bristle; third joint rounded and rather small, arista black and bare (× 45). Fronto-orbital bristles four, equally spaced and somewhat convergent; long inner and shorter outer verticals, ocellars, and divergent post-verticals.

Thorax. Dorsum shining metallic greenish black; almost metallic green in a bright light; entirely covered with fine bristles; the last dorso-centrals present. Scutellum with four bristles, the terminal pair small and crossed. Pleura shining black but reddish just below the wing insertion.

Wings as Fig. 31; milky white with white veins; the costa finely bordered with a brown line.

Halters black.

Legs all black, femora with a well marked shallow groove below into which the tibiæ can fit.

Abdomen. Dark greenish black; the last segment very long, about equal in length to the previous three segments. The male has a globular hypopygium, the female a stout blunt cylindrical ovipositor; the last segment of the female has a fringe of extra long black hairs.

Size about $1\frac{3}{4}$ mm.

Localities. Seychelles. Silhouette: Mare aux Cochons, IX. 1908; low coconut-planted country near coast, Pointe Étienne, 17. IX. 1908. Mahé: Port Victoria, XII. 1908.

Fig. 31. *Agromyza candidipennis*, n. sp., wing.

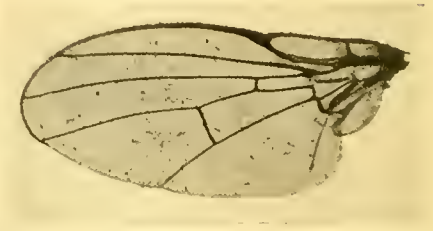


Fig. 32. *Agromyza similis*, n. sp , wing.

55. *Agromyza similis*, n. sp.

This species is very closely allied to the Palæarctic *A. æneiventris* Fallén.

Head. In general outline and chætotaxy much as the last species except that the eyes are slightly less high in proportion to their breadth; the facial pit is also flatter at the bottom. The arista is distinctly pubescent (× 45). The lunula is not evident, being sunk in with the rest of the face just above the antennæ.

Thorax as last species.

Wings as Fig. 32: glassy with brown veins.

Halters and legs all black.

Abdomen. Greenish black with practically equal sized segments, ♂ hypopygium and ♀ ovipositor far less conspicuous.

Size about 2 mm.

Localities. Seychelles. Silhouette: cultivated country; low coconut-planted country near coast, Pointe Étienne, 17. IX. 1908; Mare aux Cochons and forest above, IX. 1908. Mahé: from near Morne Blanc, about 800 ft., X.—XI. 1908; Cascade Estate, about 1000 ft.; marshy ground near sea-level at Cascade, 20. II. 1909.

56. *Agromyza* sp. ?

A single specimen of another species is in the collection, but it is not in sufficiently good condition to warrant a full description.

The insect is in form, size, etc. very close to the last species; but it is of a moderately shining and of a true black colour, including halters and legs. The head is black and very similar to the last species, but the third antennæ joint is small and slightly pointed, and the arista is bare and shorter than usual. The chætotaxy cannot be given owing to the damaged condition. The wing venation is shown in Fig. 33; the wings are slightly milky with yellow veins and a fine dark costal line.

Locality. Seychelles. Mahé: Mare aux Cochons district, 1500—2000 ft., I.—II. 1909.

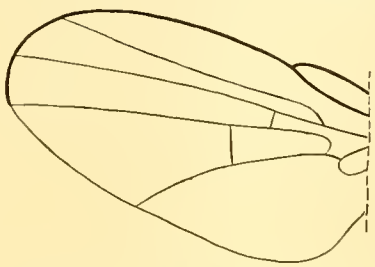


Fig. 33. *Agromyza*, sp.?, wing.

57. *Agromyza* sp. ?

A second single imperfect specimen. No description can be given in any detail, but the insect has a remarkable mouth-margin, produced each side into a pointed lobe, which terminates in a long slightly curved white spine. The insect is quite black; wings pale with brown veins; discal cross-vein just about opposite the junction of the first vein with the costa, and the relative position of the two cross-veins just about as shown in Fig. 33; though the terminal section of the fifth vein is shorter than the part bordering the discal cell, instead of being of about the same length.

Locality. Chagos Islands: Salomon Atoll, Île de Passe; bred from mines in *Scævola Kœnigii* (1905).

Leucopis, Meigen.

Leucopis Meigen, Syst. Beschr., xi. (1830), p. 133.

58. *Leucopis griseola* (Fallén), Dipt. Suec., Agromyz., (1823), p. 8 [*Anthomyza*].

There is a fairly long series of a species of this genus; they exhibit no structural differences from the above species, but are on the average somewhat smaller in size, being from $1\frac{1}{2}$ to $1\frac{3}{4}$ mm. long. The legs are not quite so definitely coloured and the third antennal joint is in most cases slightly larger. It is impossible to separate the specimens satisfactorily from the members of the series of *L. griseola* in the Cambridge Museum.

Localities. Seychelles. Silhouette: Mare aux Cochons plateau and forest above, IX. 1908; Mahé: country above Port Glaud, 500—800 ft., 5. XI. 1908; Port Victoria, XII. 1908; Cascade Estate, about 1000 ft.; Anonyme Island, I. 1909; marshes on coastal plain, Anse aux Pins and Anse Royale, I. 1909. Also known from the Canary Islands.

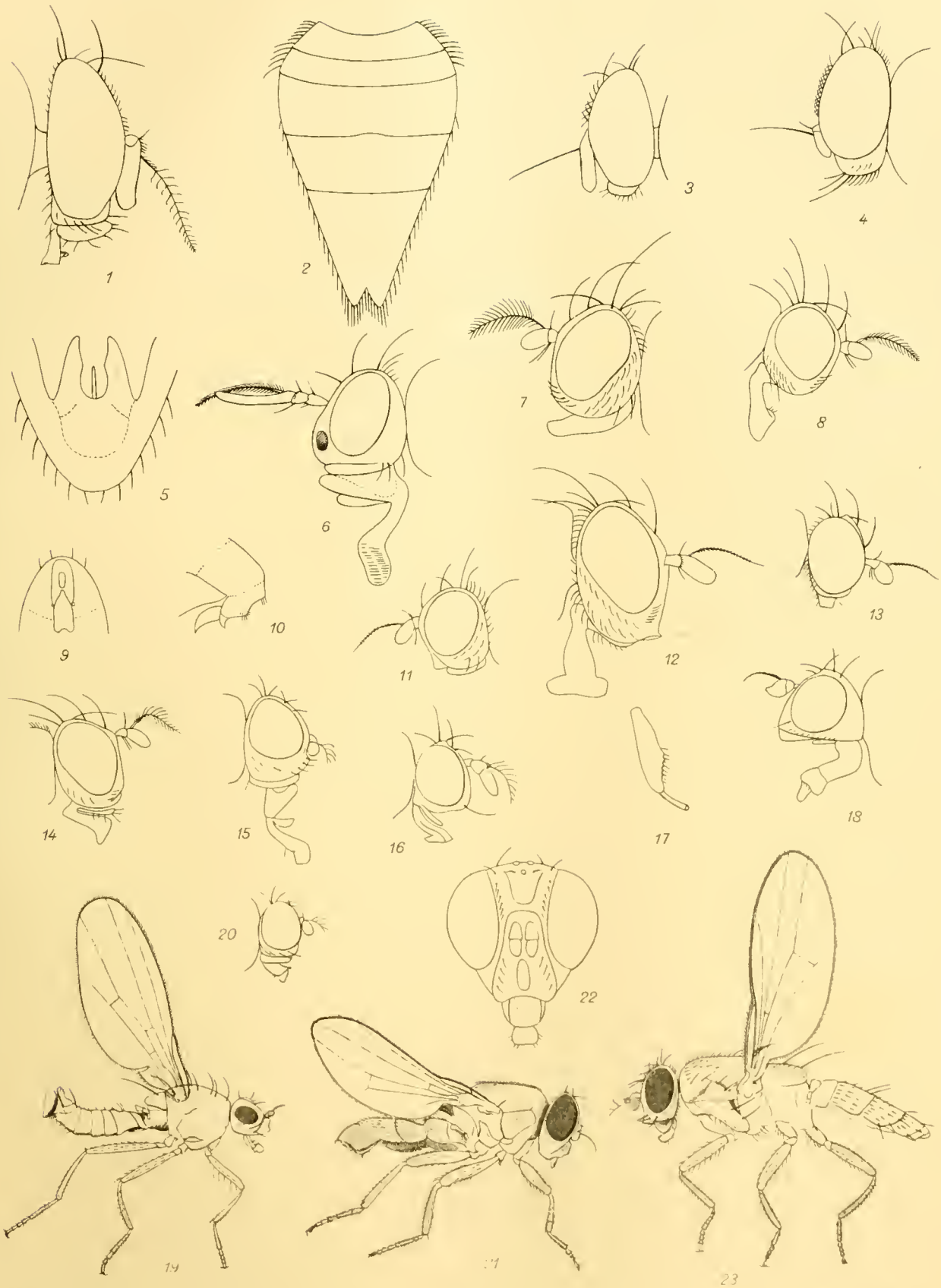
EXPLANATION OF PLATES 15 AND 16.

Plate 15.

Fig. 1. *Lonchæa plumata*, n. sp., head × 35.
Fig. 2. „ „ n. sp., ♂, abdomen × 20.
Fig. 3. „ *longicornis*, n. sp., head × 20.
Fig. 4. „ *vibrissifer*, n. sp., head × 20.
Fig. 5. *Pachycerina seychellensis*, n. sp., ♂, abdomen × 20.
Fig. 6. „ „ n. sp., head × 20.
Fig. 7. *Sapromyza striata*, n. sp., head × 20.
Fig. 8. „ *funebricornis*, n. sp., head × 20.
Fig. 9. „ *mahensis*, n. sp., tip of abdomen × 20.
Fig. 10. „ „ n. sp., tip of abdomen × 20.
Fig. 11. „ *nudiuscula*, n. sp., head × 20.
Fig. 12. „ *crassicaput*, n. sp., head × 20.
Fig. 13. „ *perpunctata*, n. sp., head × 20.
Fig. 14. *Homoneura varifrons*, n. sp., head × 20.
Fig. 15. *Hecamede lacteipennis*, n. sp., head × 15.
Fig. 16. *Psilopa longicornis*, n. sp., head × 25.
Fig. 17. *Parydra tuberculifera*, n. sp., front femur × 25.
Fig. 18. „ „ n. sp., head × 25.
Fig. 19. *Canace mahensis*, n. sp., × 22.
Fig. 20. *Allotrichoma argentiprætexta*, n. sp., head × 20.
Fig. 21. *Enchastes scotti*, n. g. et n. sp., × 15.
Fig. 22. „ „ n. g. et n. sp., head × 25.
Fig. 23. *Acanthonotiphila coriacea*, n. g. et n. sp., × 22.

Plate 16.

Fig. 1. *Ops glaberrima*, n. sp., head, side view × 20.
Fig. 2. „ „ n. sp., head, top view × 20.
Fig. 3. „ „ n. sp., thoracic dorsum.
Fig. 4. „ „ n. sp., var. *dentata*, n. var., thoracic dorsum × 20.
Fig. 5. *Gampsocera scutellata*, n. sp., thoracic dorsum × 20.
Fig. 6. *Meroscinis æneifrons*, n. sp., head, side view × 25.
Fig. 7. „ „ n. sp., head, top view × 25.
Fig. 8. „ *rugosa*, n. sp., head, top view × 25.
Fig. 9. *Hippelates longiseta*, n. sp., head × 30.
Fig. 10. *Gaurax seychellensis*, n. sp., head × 25.
Fig. 11. *Oscinis acuticornis*, n. sp., head × 45.
Fig. 12. „ *oculata*, n. sp., head, side view × 25.
Fig. 13. „ „ n. sp., head, top view × 25.
Fig. 14. „ *longipennis*, n. sp., head, side view × 25.
Fig. 15. „ „ n. sp., head, top view × 25.
Fig. 16. „ *halterata*, n. sp., head, side view × 25.
Fig. 17. „ „ n. sp., head, top view × 25.
Fig. 18. „ *varicornis*, n sp., head × 25.
Fig. 19. *Agromyza pubicornis*, n. sp., head × 25.
Fig. 20. „ *funebris*, n. sp., head × 20.
Fig. 21. „ *candidipennis*, n. sp., head × 25.



C.G.L. et E.W. del

E. Wilson, Cambridge

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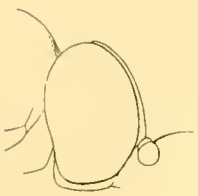

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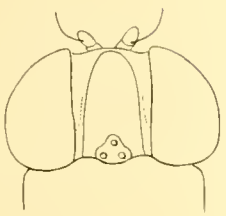

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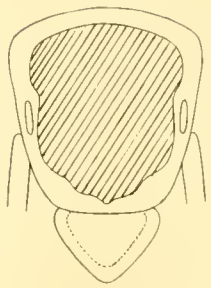

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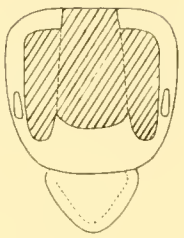

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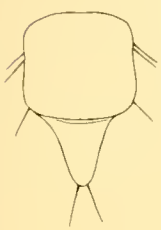

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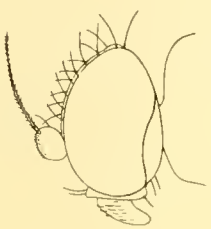

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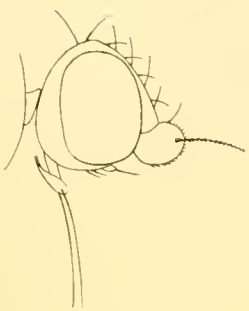

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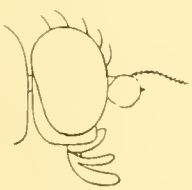

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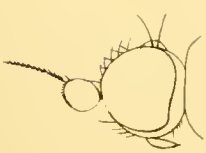

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C.G.L. del

E. Wilson, Cambridge

DIPTERA

No. XX.—THE ACARINA OF THE SEYCHELLES.

By Cecil Warburton, M.A.

(Plates 17—19, and 4 Text-figures.)

(Communicated by Prof. J. Stanley Gardiner, M.A., F.L.S.)

Read 20 June, 1912.

The Acarina here recorded were obtained from two sources. A certain number—naturally comprising the larger forms for the most part—were collected on the spot and were submitted for examination either mounted on cards, or in tubes containing alcohol. It was not to be expected that such minute objects as the smaller Oribatidæ should be represented in such a collection, and the presence of numerous examples, considerably less than a millimeter in length, was a matter of surprise. Few species, however, were obtained in this way, the great bulk of the collection consisting of two large Oribatidæ—*Oribata alata* and *Neoleodes rugosus*, n. sp.—and some tubes of the huge Gamasoid mites Holothyridæ.

The second source possesses a particular interest. Instead of troubling to collect creatures so microscopic, members of the Expedition were asked to send home tins containing fresh damp moss, in which many of the Oribatidæ habitually live. It had been previously ascertained* that mites will arrive alive and in good condition in such moss when despatched from the most distant parts of the world, even if the tins are hermetically sealed. Obviously it is possible in the laboratory to detect objects which would certainly be overlooked in the open, and any great extension of our knowledge of Oribatidæ will probably come from the application of this method. Only once previously has a record of mites obtained in this manner from a foreign country been published. In 1906 my friend Mr N. D. F. Pearce described, in the Journal of the Royal Microscopical Society, the mites contained in moss from the Sikkim Himalaya.

A simple machine devised by Berlese and described by him in "Redia," vol. i. p. 85, is of the greatest assistance in collecting living mites from the moss or other material in which they live. It consists essentially of a large tin funnel surrounded by a water-jacket. The moss is placed on a tray of wire gauze at the top of the funnel, and the water surrounding the funnel is heated by a Bunsen's burner. As the moss dries the mites descend, till at length they drop down the funnel into a small vessel containing water, placed ready for their reception. By this means the moss is searched much more thoroughly and with much less labour than by the alternative method of shaking it over white paper and collecting the mites individually as they reveal themselves by commencing to crawl about over the surface.

* Proc. Camb. Phil. Soc., vol. xiv., pt. 1, p. 13.

There are special difficulties in dealing with specimens of the minute size of many of the Oribatidæ mites. They are frequently so small that it is impracticable to preserve them separately in tubes of spirit, for, apart from the fact that their legs curl up so as to obscure important points of structure, they are extremely liable to be lost altogether. It is therefore generally necessary to mount them speedily in balsam, but even so many characteristics easily visible in the living specimen are lost to sight. The ideal method would be to examine each specimen and make elaborate notes upon it before mounting, but this would presuppose an amount of leisure on the part of the investigator which is very unlikely to be at his disposal. The consequence is that many specimens are secured which may easily be new species, but of which a sufficiently clear view cannot be obtained to make out the essential points, and it is only safe to describe such species as can be examined with some degree of accuracy.

Oribatidæ.

As far as investigation has at present proceeded there appears to be a remarkable similarity between the Oribatid fauna of the most widely separated regions of the world. No creatures would seem to be less likely to distribute themselves widely, since they are wingless and destitute of the silken threads by which spiders migrate, nor do they infest ships, or cling to animals or birds. Yet what appear to be precisely the same forms occur thousands of miles apart, and those which are obviously different seldom vary greatly from the general European type.

In the moss from the Sikkim Himalaya, Mr Pearce found 20 species, divided among 12 genera, and of these 12 were British. In the more plentiful material from the Seychelles, omitting numerous unsatisfactory specimens, 36 species were made out, representing 12 genera, and of these species 12 were British or at all events deserving of no more than varietal rank. It is remarkable that four of the British species—*Oribata alata*, *Tegeocranus velatus*, *Hermannia convexa*, and *Nothrus tectorum* were the same in each case. No representatives of the genera *Pelops* or *Cepheus* were found.

The following is a complete list of the Oribatidæ from the Seychelles.

Oribatinæ.

1. *Oribata alata* (Herm.).
2. *Oribata cuspidata*, Mich.
3. *Oribata brevis*, n. sp.
4. *Oribata elongata*, n. sp.
5. *Oribata mammillata*, n. sp.
6. *Oribata longissima*, n. sp.
7. *Oribata seychellensis*, n. sp.
8. *Oribata lata*, n. sp.

Notaspidinæ.

9. *Tegeocranus velatus*, Mich.
10. *Carabodes labyrinthicus*, var. *clavatus*, n. var.
11. *Liacarus piriformis*, n. sp.
12. *Notaspis splendens* (C. L. Koch).
13. *Notaspis sculptilis*, Warburton and Pearce.
14. *Notaspis clavipectinata*, Mich.
15. *Notaspis clavipectinata* var. *calva*, n. var.
16. *Notaspis impolita*, n. sp.
17. *Notaspis reticulata*, n. sp.
18. *Notaspis lamellicornis*, n. sp.
19. *Notaspis flagellata*, n. sp.
20. *Notaspis simplex*, n. sp.
21. *Notaspis acutipes*, n. sp.
22. *Notaspis frontata*, n. sp.

Damæinæ.

23. *Amerus seychellensis*, n. sp.
24. *Damæus retiarius*, n. sp.
25. *Damæus complanatus*, n. sp.

Nothrinæ.

26. *Hermannia convexa* (C. L. Koch).
27. *Hermannia nasata*, n. sp.
28. *Neoleodes rugosus*, n. sp.

29. *Neoleodes striatus*, n. sp.
30. *Neoleodes femoralis*, n. sp.
31. *Nothrus seychellensis*, n. sp.
32. *Nothrus tectorum* var. *longipes*, n. var.
33. *Nothrus prismaticus*, n. sp.
34. *Nothrus scotti*, n. sp.
35. *Hypochthonius pallidulus*, C. L. Koch.

Phthiracarinae.

36. *Phthiracarus arduus* (C. L. Koch).

Notes on British species of Oribatidæ, or varieties of them, from the Seychelles.

Specimens of *Oribata alata* appear to be very plentiful everywhere ; a large number were taken on the spot, and the species was present in all the consignments of moss. Their size was extremely variable, some specimens exceeding 1·5 mm. in length, while others were no more than ·7 mm. They also varied somewhat in texture, some being entirely glossy and polished, while others were more or less punctate and duller in appearance. Nevertheless all attempts to divide the numerous examples into clearly marked varieties failed. It is known that *O. alata* is a very variable species ; examples occurred in the Sikkim moss examined by Mr Pearce, but these were all large (about 1·2 mm.), and he alludes to them as *O. alata* var. *major*.

A few examples of what appeared to be *O. cuspidata* occurred in moss from Mt Alphonse*.

The only *Tegeocranus* found was the cosmopolitan *T. velatus*, which occurred frequently in moss wherever collected. It has generally been found present in moss from any part of the world as far as investigations have been carried out hitherto. It is extremely doubtful whether this minute creature is properly attributed to the genus *Tegeocranus*, and there is no evidence that the Seychelles possess any forms allied to the extremely common European species *T. cepheus*.

A small *Carabodes* occurred fairly plentifully in moss from the Cascade Estate. It precisely resembled a somewhat small *C. labyrinthicus* except that the hairs on its body were distinctly clavate, and it was therefore considered as a variety of that species and named *C. labyrinthicus* var. *clavatus*.

The genus *Notaspis* is generally well represented, as regards its smaller forms, in moss from any locality, and the Seychelles examples were numerous, and included some which were referred without much hesitation to the British species *N. splendens*, *N. sculptilis* and *N. clavipectinata*. A few agreed with the last-named species in everything but the absence of hairs on the pseudostigmatic organs, and are recorded as *N. clavipectinata* var. *calva*.

The only *Hermannia* found occurred in moss from Mahé. It was indistinguishable from the well-known *H. convexa*, though somewhat smaller than British examples.

Among the four representatives of the genus *Nothrus* obtained from Seychelles moss only one strongly resembled a previously known form. It is described below as *N. tectorum* var. *longipes*.

The solitary species of *Hypochthonius* observed appeared to differ in no respect from *H. pallidulus*, and there seemed to be no reason to separate the forms of *Phthiracarus* obtained from the European species *Ph. arduus*.

* The localities unless otherwise mentioned are in the Island of Mahé.

Description of new species of Oribatidæ.

Oribatinæ.

3. *Oribata brevis*, n. sp. (Pl. **17**, fig. 1).

Very small, less than ·2 mm. in length, texture rather rough. Cephalothorax as long as abdomen; lamellæ long, broad, blades on edge; pseudostigmatic organs short and clavate. Abdomen broad-oval. Pteromorphæ short, with sharp anterior projections. Legs short, monodactyle.

Several specimens occurred in moss from Mt Alphonse.

Though not as yet described, specimens of what appears to be the same species have been received from British Guiana.

4. *Oribata elongata*, n. sp. (Pl. **17**, fig. 5).

Length about ·4 mm.

Body long and narrow, only the claws of legs 4 appearing beyond it. Lamellæ narrow lateral ridges, without cusps or translamella; pseudostigmatic organs long curved rods with oval, roughened termination. No dividing line between cephalothorax and abdomen. Pteromorphæ long, narrow, only very slightly projecting forwards. Legs monodactyle (or tridactyle, very heterodactyle).

From moss, Mahé, Mt Alphonse.

5. *Oribata mammillata*, n. sp. (Pl. **17**, fig. 7).

Length about ·4 mm.

Elongate, the whole body covered with fine mammillæ. Lamellæ faint long ridges, without cusps or translamella. Pseudostigmatic organs long, sinuous, clavate. Abdomen long, with six very short clavate hairs at the posterior end; pteromorphæ short, strap-like, rounded anteriorly, mammillate like the abdomen. Legs monodactyle, 1 and 2 strong with slight protuberance on the penultimate article, 3 and 4 weak.

In moss from Silhouette.

6. *Oribata longissima*, n. sp. (Pl. **17**, fig. 6).

Very much like *O. elongata*, but still more elongate, the fourth pair of legs not nearly attaining the end of the abdomen. Lamellæ longer; a faint translamella. The pseudostigmatic organs are long and curved backwards; in profile they appear filiform, but in the dorsal aspect they are very slightly clavate. Legs monodactyle (or tridactyle, very heterodactyle).

In moss from Cascade Estate, Mahé.

7. *Oribata truncata*, n. sp. (Pl. **17**, fig. 4).

Length about ·45 mm.; three specimens distinctly larger.

An *Oribata* of the *alata* type; cephalothorax unmarked, very convex, bordered by very low ridge-like lamellæ and translamella; pseudostigmatic organs long, fairly stout

rods. No division between cephalothorax and abdomen. Abdomen oval, truncated behind, glossy but finely punctate; pteromorphæ roundly prominent in front, moveable, the external border notched at its anterior third. Legs with broad flattened femora, tridactyle.

Numerous specimens mounted on card by Mr Scott. Mare aux Cochons district, about 1500 ft. and near Pot-à-eau, Silhouette.

7. *Oribata seychellensis*, n. sp. (Pl. **17**, fig. 3).

Length about ·5 mm.

Cephalothorax rather long, fairly pointed. Lamellar ridges long, with blunt cusps $\frac{1}{3}$ from anterior end, then continuing and converging nearly to the anterior border; no translamella. Pseudostigmatic organs short thick clavate rods. Abdomen with elegant contour, recalling *O. gracilis*; pteromorphæ rather short and deep, folded well downwards, and hardly visible dorsally. Texture glossy, but with very fine shallow punctations. Tridactyle.

Numerous specimens mounted on card. Cascade Estate, about 1000 ft. Also from moss, Mt Alphonse.

8. *Oribata lata*, n. sp. (Pl. **17**, fig. 2).

Length about ·85 mm.

Texture dull, with minute punctations and rugosities. Cephalothorax broad and short; lamellæ strong converging ridges extending about half the length of the cephalothorax and with very slight blunt cusps bearing strong lamellar hairs, and continued as fainter ridges; a strong translamella. Pseudostigmatic organs fairly long, rather strong curved rods. A slight carina extends backwards from the middle of the translamella. Abdomen as broad as long, presenting a shagreened appearance, with two or three longitudinal striæ in the median anterior portion. Pteromorphæ moderately long but shallow, deepest anteriorly, rounded in front. Legs tridactyle.

One specimen, mounted on card, taken in the forest above the Cascade Estate.

Notaspidinæ.

11. *Liacarus piriformis*, n. sp. (Pl. **17**, fig. 8).

Length about ·8 mm.

Pear-shaped, with fairly long, tapering cephalothorax and nearly circular glossy abdomen. Lamellæ and translamella ridge-like, making the letter A on the cephalothorax with the cross-bar rather anterior. Strong lamellar and inter-lamellar hairs. Pseudostigmatic organs fairly long, stout, curved rods with oval tip. Legs long. Femora of legs 2 with slight antero-inferior prolongation. Tridactyle. No division between cephalothorax and abdomen.

One specimen (mounted on card) from Mahé, near Morne Blanc; one specimen, from moss, over 2400 ft. and four from Mare aux Cochons, both Silhouette.

15. *Notaspis clavipectinata* var. *calva*, n. var.

In size and details of structure apparently precisely like *N. clavipectinata* except that the clavate pseudostigmatic organs are destitute of the hairs present on those of the type.

Moss, Silhouette.

16. *Notaspis impolita*, n. sp. (Pl. **18**, fig. 12).

Length about ·4 mm.

Dark, piriform, texture rough. Cephalothorax long, rather bluntly pointed. Lamellæ ridge-like extending from pseudostigmata to near the anterior border. Pseudostigmatic organs of medium length, curved, the thickened terminal portion roughened. Abdomen with four rather conspicuous hairs on dorsum and six very short clavate hairs at posterior end. Legs with nearly circular femora in lateral aspect. Tridactyle, heterodactyle.

Moss, Silhouette.

17. *Notaspis reticulata*, n. sp. (Pl. **18**, fig. 13).

Length about ·5 mm.

Colour dark, the whole surface reticulate, the cells of the reticulation largest in the median region of the abdomen. Cephalothorax rather broad and blunt anteriorly. Lamellæ narrow blades on edge. Pseudostigmatic organs fairly long, thick, clavate, roughened and darker coloured at the end. Palps well visible dorsally. Abdomen flat dorsally, fringed posteriorly with detachable material held by strongly-curved clavate hairs. Legs short, stout, with similar fringing material held by clavate hairs, but easily removed. Tridactyle.

Moss, Silhouette.

18. *Notaspis lamellicornis*, n. sp. (Pl. **18**, fig. 14).

Length about ·52 mm.

Cephalothorax long and pointed. In size and general appearance the mite closely resembles *N. maculosa* (Warburton and Pearce, Proc. Zool. Soc., 1905, ii. p. 567) but the lamellæ are short and converging, and the general texture is less roughened. The abdomen possesses numerous hairs. Legs monodactyle. The pseudostigmatic organs are long and pectinate, recalling the antennæ of a lamellicorn beetle.

Moss, Silhouette.

19. *Notaspis flagellata*, n. sp. (Pl. **17**, fig. 9).

Length about ·55 mm.

Cephalothorax long and pointed, without lamellæ; the hinder portion extremely gibbous. Pseudostigmatic organs characteristic, being at first straight and clavate, but produced beyond the oval club-head into a whip-like process of somewhat greater length. Abdomen sub-circular, bearing a few very short hairs. Legs long and slender; monodactyle.

This mite bears a general resemblance to the very *Notaspis*-like *Damæus nitens*, but it undoubtedly belongs to the genus *Notaspis*.

Moss, Palm Valley, Praslin.

20. *Notaspis simplex*, n. sp.

Differs only from *N. flagellata* in its somewhat smaller size and in the clavate pseudostigmatic organs which are destitute of the whip-like prolongation.

Moss, Palm Valley, Praslin.

21. *Notaspis acutipes*, n. sp. (Pl. **17**, fig. 10).

Length about ·35 mm.

Cephalothorax almost an equilateral triangle. Lamellæ short converging ridges with slight cusps; a well-marked translamella. Pseudostigmatic organs rather long and clavate, with long-oval termination. Abdomen oval, somewhat pointed behind, finely punctate all over, giving a roughened appearance. Legs long and slender; tarsi particularly long and sharp; monodactyle.

Moss, Mahé.

22. *Notaspis frontata*, n. sp. (Pl. **17**, fig. 11).

Length about ·16 mm.

Cephalothorax rather broad; pseudostigmata large, pseudostigmatic organs long, clavate, with large oval head. The cephalothorax is divided into two regions by a transverse line between the pseudostigmata with a median anterior loop and two backwardly projecting processes. The portion in front of this is coarsely reticulate or pitted. Two additional short lateral longitudinal ridges on the posterior portion. Abdomen oval, rather broad behind, with four carinæ in the anterior region and four clavate hairs behind. Legs moniliform, monodactyle.

A single specimen of this minute species was found in moss from Palm Valley, Praslin, and was fortunately examined with some care, and roughly drawn, before mounting it in balsam. It is quite possibly common, but its small size may readily cause it to be overlooked.

Damæinæ.

23. *Amerus seychellensis*, n. sp. (Pl. **18**, fig. 15).

Length about ·53 mm.

Body dark, very elongate, the cephalothorax almost equal in length to the abdomen. Lamellæ linear, very long and sub-parallel, giving off slight internal processes a little in front of the pseudostigmata. Pseudostigmatic organs long, flagelliform, monodactyle.

In general appearance it resembles *A. speciosus*, Pearce (Jour. Roy. Micr. Soc., 1906, p. 272), but the cephalothorax is longer and the lateral projections (tectopedia) less pronounced, while the pseudostigmatic organs are quite different. The abdomen is similarly furnished with rather long hairs, but is more pointed posteriorly.

A single specimen from moss, Cascade Estate, Mahé.

24. *Damæus retiarius*, n. sp. (Pl. **18**, fig. 21).

Length about ·36 mm.

In size and general configuration much like *D. verticillipes*, Nicolet. Cephalothorax

broad at the base, with rather narrow, fairly pointed rostral portion. Pseudostigmata far apart, pseudostigmatic organs very long and rather thick, flagelliform ; lateral projections (tectopedia) sharply curved, uncate. The sub-globular abdomen is enveloped in a loose fine-meshed net, with several curved hairs at its posterior border. The curved lines at the junction of cephalothorax and abdomen constitute, apparently, an apparatus for the attachment of the net.

Legs moniliform and encrusted with flanges of detachable material. Monodactyle.

Three specimens from moss, Mt Alphonse.

The curious loosely fitting net over the abdomen occurs in no described species, but some forms received from British Guiana have the same characteristic.

25. *Damæus complanatus*, n. sp. (Pl. **19**, fig. 20).

Length about ·6 mm.

The whole dorsum of one level, the abdomen being flat, as though planed (see profile, fig. 20 *a*). Cephalothorax sub-triangular, the lateral chitinous projections (tectopedia) well developed. Pseudostigmata small and very far apart; pseudostigmatic organs flagelliform. Abdomen nearly circular as seen from above. Legs long and slender, the femora of legs 1—3 encrusted with flanges of detachable material, giving them a feathered appearance.

One example from moss, Mt Sebert.

Nothrinæ.

27. *Hermannia nasata*, n. sp. (Pl. **18**, fig. 16).

Length about ·6 mm.

Cephalothorax long, with elongate, sharp-pointed rostral portion. Pseudostigmata situated far from the abdomen, pseudostigmatic organs short stout rods. Abdomen long, parallel-sided for most of its length, but finally the sides converge and the end is truncated. The whole abdomen is strongly reticulate. Legs strong, tridactyle

Two specimens from moss, Mt Sebert.

28. *Neoleodes rugosus*, n. sp. (Pl. **19**, fig. 22).

Length about 1·8 mm.

Cephalothorax broad, divided by a transverse line into two regions of about equal length, the anterior region smooth, the posterior rugged, and bearing the pseudostigmata, which are rather near together, and white-rimmed. Pseudostigmatic organs short, sharp, white spikes, black at the tip (fig. 22 *a*). Lateral chitinous projections behind the first legs (tectopedia) prominent. Abdomen large, bluntly prominent postero-dorsally, covered by sinuous rugosities, never, apparently, decorated by a succession of cast skins. Legs long and strong, densely punctate, with scopulate tarsi. Leg 1 with pedunculate tarsus and with the penultimate joint projecting somewhat over its base. Tridactyle.

This large species was strongly represented in all the collections, in tubes, in moss, and among the specimens mounted on card, and appears to be plentiful everywhere.

29. *Neoleodes striatus*, n. sp. (Pl. **19**, fig. 23).

Smaller and more elongate than *N. rugosus*.

Length about ·9 mm.

Cephalothorax long, the transverse line very anterior, the anterior portion not half the length of the posterior. Both regions pitted, the posterior more coarsely. Pseudostigmata large, far apart, white rimmed; pseudostigmatic organs short black rods with oval white head (fig. 23 *a*). Abdomen elongate, widest near the posterior end, with a short, blunt, caudal process arising from a raised pitted oval area. The anterior median field is deeply pitted and exhibits a few longitudinal striæ, while the posterior lateral fields have strong transverse or radiating striæ. Legs much like those of *N. rugosus*.

Four specimens, Praslin, Côtes d'Or Estate.

30. *Neoleodes femoralis* (Pl. **19**, fig. 24).

Small, with pronounced caudal process.

Length about ·5 mm.

Cephalothorax broad and blunt, the transverse line anterior. Anterior (rostral) region pitted, as is also the posterior region except on triangular white areas in front of the pseudostigmata. Pseudostigmata near together; pseudostigmatic organs stout white spikes with black points. Femur of leg I broadened distally and produced into an infero-external spur.

One specimen (mounted on card) bearing two cast skins, Cascade Estate, Mahé.

31. *Nothrus seychellensis*, n. sp. (Pl. **18**, fig. 18).

Length about ·75 mm.

Cephalothorax long, punctate, with rather blunt rostrum. Rostral hairs thick, white, clavate. Pseudostigmata far apart; pseudostigmatic organs long, straight, rigid. Abdomen elongate, rounded posteriorly, punctate, the dorsum concave immediately within the periphery but raised again in a median longitudinal convex area; about five pairs of short clavate hairs in two longitudinal rows on the convex median region, and four on either side of the body. The rounded posterior end with four terminal and two subterminal (more dorsal) clavate hairs. Legs moderately long and strong, tridactyle.

Apparently a common species in moss, Mt Alphonse, Mt Sebert, and under stones.

32. *Nothrus tectorum* var *longipes*, n. var.

In size and appearance much like *N. tectorum* but on close examination its texture is seen to be coarser and its legs somewhat longer. The pseudostigmata are farther apart, and the pseudostigmatic organs are long, very slender stems with slightly thickened, black tip. The dark lateral patches on the abdomen are present, and there are some clavate hairs at the posterior end, though (at all events in the mounted specimens) the dorsal hairs are not visible.

Fairly common in moss from Palm Valley, Praslin.

33. *Nothrus prismaticus*, n. sp. (Pl. 18, fig. 17).

Length about ·3 mm.

A very small species, about the size of *N. monodactylus*. Cephalothorax long, pointed. Pseudostigmata far apart; pseudostigmatic organs ? Abdomen divided by straight ridges into areas in different planes, giving a prismatic effect. Sides parallel, two longitudinal ridges dividing the greater part of the abdomen into three regions, the median horizontal, the laterals sloping downwards; the posterior declivity truncated and divided by ridges into two diamond-shaped and one triangular surface. Fairly long peripheral hairs, especially at the posterior end. Legs short and not very strong.

One specimen from moss, Mahé.

34. *Nothrus scotti*, n. sp. (Pl. 18, fig. 19).

Length about ·6 mm.

Cephalothorax almost an equilateral triangle; pseudostigmata far apart, pseudostigmatic organs long, filiform; rostral hairs short and clavate. Abdomen parallel-sided, somewhat concave dorsally but with the median area rising again slightly and bearing five pairs of spatulate hairs; four pairs of similar hairs on either side. Posterior end truncate and bearing two blunt protuberances each carrying a long outwardly curving hair. The middle posterior region protrudes at a lower level and bears two short clavate hairs. The whole surface has a roughened or shagreened appearance.

Found in company with *N. seychellensis* in moss from Mt Sebert, and named after Mr Hugh Scott.

Holothyridæ.

With the exception of the Ixodoidea, or ticks, hardly any of the Acarina approach in size the curious Gamasoid mites, for which Thorell in 1882 established the family Holothyridæ. Gervais in 1842 had described one of the forms under the generic name of *Holothyrus*, "a new genus of Acarina of the family Oribates." Thorell perceived its nearer relation to the Gamasidæ, but agreed that it approached the Oribatidæ in some respects. He saw, however, sufficient grounds for regarding these creatures as constituting a family apart. They are certainly Gamasoid in general character.

Besides their comparatively immense size—they may attain a length of 7 mm.—the Holothyridæ possess several remarkable characteristics. Perhaps the most remarkable is the presence in the buccal cavity of a radula, strictly comparable to that of a member of the Glossophora. Another striking feature is the great size and the complicated structure of the female genital opening. This is large in the Oribatidæ, but in the Holothyridæ its relative dimensions are very much larger and its structure quite different. Instead of two folding doors meeting in the middle line there are four moveable pieces, the largest hinging from the posterior end, two side-pieces opening outwards, and a shallow lid-like piece hinging in front. When open, the apparatus presents a comparatively immense gap in the body of the animal. In material from the Seychelles Thon* found three species of *Holothyrus*,

* Zool. Jahrb. Bd. xxiii., 1906, p. 677.

all new. These he named *H. braueri* (37), *H. seychellensis* (38) and *H. niger* (39), the last-named being only represented by the male. All three species occurred in the material here dealt with, which also furnished what is apparently the female of *H. niger* and a new form described below as *H. gardineri*.

39. *Holothyrus niger* Thon, ♀. (Text-figure 4.)

Of the colour and general appearance of the ♂, but destitute of its leg armature and slightly smaller (about 5·8 mm. in length). The genital armature (text-figure 4) is of characteristic design. The median plate (*hauptplatte*) is unusually small, the anterior and lateral plates encroaching much upon it. It is produced forward antero-laterally into two cornua which entirely separate the anterior plate from the lateral plates, and its sides are deeply excavate for the reception of the unusually broad lateral plates.

Four specimens in company with several males, from Silhouette.

40. *Holothyrus gardineri*, n. sp. (Text-figures 1—3).

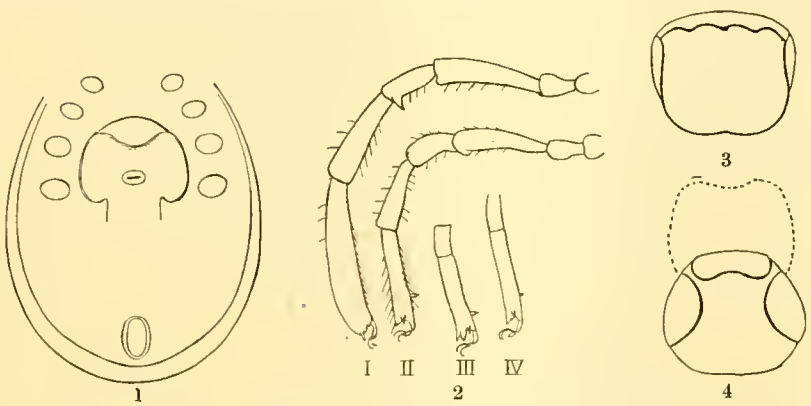


Fig. 1. Venter of *H. gardineri* ♂. Fig. 2. Legs I and II, and tarsi III and IV of *H. gardineri* ♂.
Fig. 3. Genital plate of *H. gardineri* ♀. Fig. 4. Genital plate of *H. niger* ♀.

Male about 4 mm. in length, black-brown, not highly polished. Genital area in general design like that of *H. longipes* but with the prominences at its postero-lateral limits much more salient. Peritreme broadest in the middle and tapering to either end.

Legs moderately long and slender and only sparsely clothed with hairs; leg 1 with the tarso-metatarsus of the same colour as the rest of the animal and only slightly dilated, and with a fairly strong spur under the distal end of the patella; tarsi of legs 2, 3, and 4 with three terminal spurs, two being more or less dorsal and the third lateral on the external side, and small conical spur on the under surface towards the distal end—very small on leg. 4.

Female about 4·5 mm., of the colour and general appearance of the male, but with the legs destitute of the patellar and infra-tarsal spurs. Genital area large, the median plate very broad, with sides almost rectilinear, and its anterior border a sinuous transverse line. Lateral plates very small and narrow; anterior plate very broad and shallow.

Two ♂ and two ♀, taken in the jungle, Mahé, at an elevation of over 1200 ft.

The details of structure recall *H. longipes* Thorell, but the legs are not especially long, the anterior leg of the male measuring about 5 mm.

I have named this species after Professor J. Stanley Gardiner.

Ixodidæ.

The only ticks in the collection were taken from a Fox-terrier at Mahé and belonged to the species *Rhipicephalus sanguineus* (Latr.). This species, being more especially a dog-parasite, has penetrated to most of the fairly warm regions of the world. Its original home was probably Africa. It is known to be one of the conveyors of canine piroplasmosis.

(Four species of ticks, collected by the Expedition in the smaller islands which were visited, were recorded by Professeur L. G. Neumann in the Trans. Linn. Soc., Zool., ser. 2, vol. xii., pp. 193—6. Of these the above mentioned *Rhipicephalus sanguineus* (Latr.) was obtained on Cerf Island, Providence. This is an uninhabited island only occasionally visited by fishermen from an island, 15 miles away, on which there are no dogs. It is, however, a great breeding place for birds, from which we supposed the ticks to have come. J. S. G.)

EXPLANATION OF PLATES 17, 18, AND 19.

Plate 17.

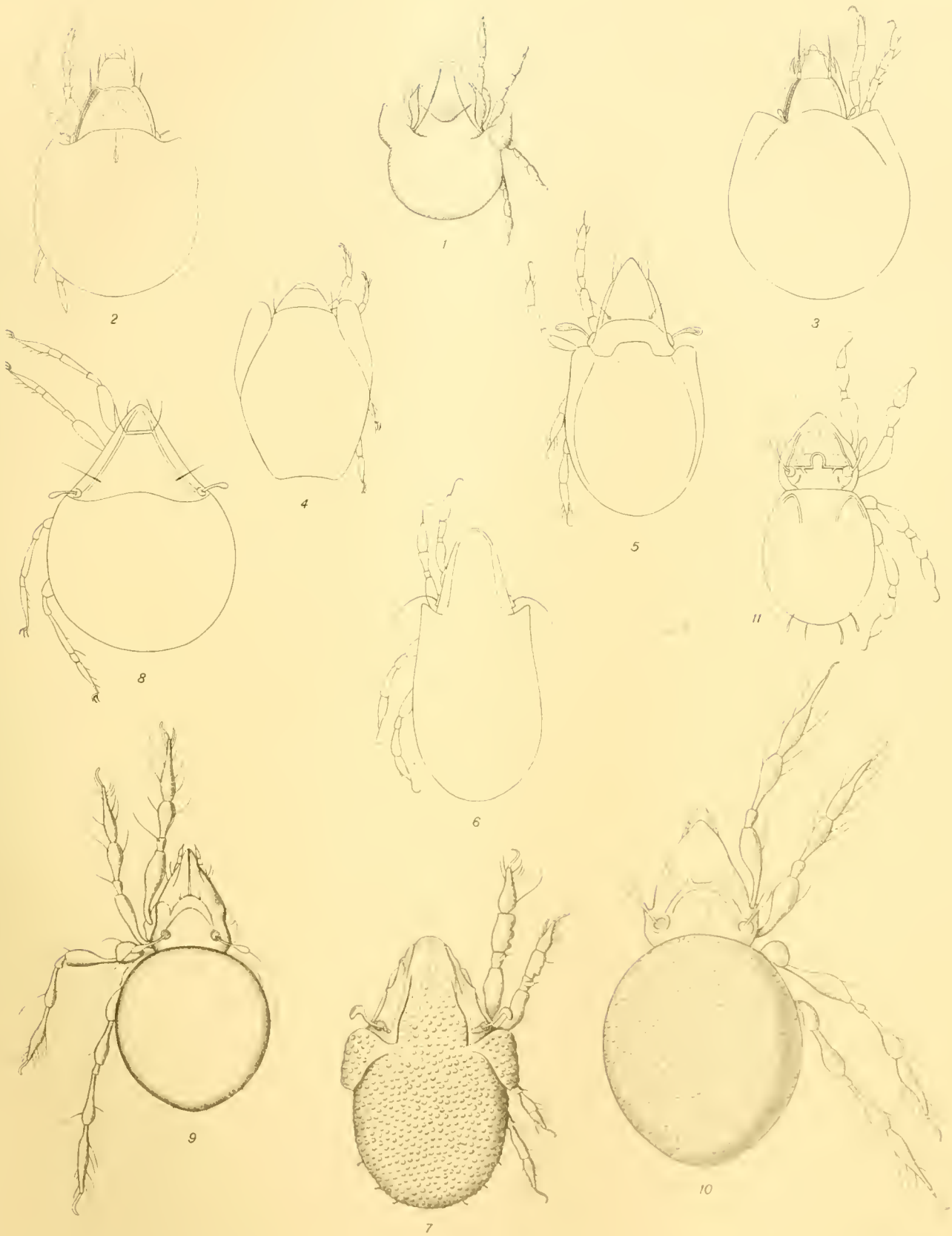
Fig. 1. *Oribata brevis.*
Fig. 2. „ *lata.*
Fig. 3. „ *seychellensis.*
Fig. 4. „ *truncata.*
Fig. 5. „ *elongata.*
Fig. 6. „ *longissima.*
Fig. 7. „ *mammillata.*
Fig. 8. *Liacarus piriformis.*
Fig. 9. *Notaspis flagellata.*
Fig. 10. „ *acutipes.*
Fig. 11. „ *frontata.*

Plate 18.

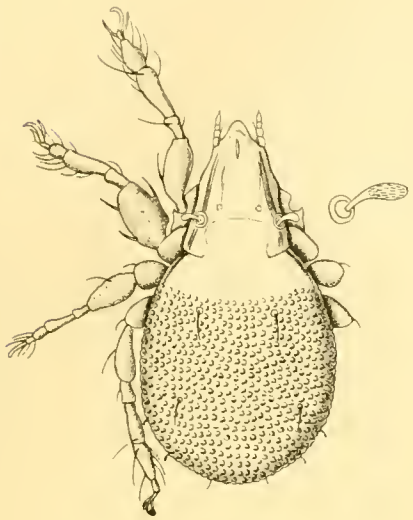
Fig. 12. *Notaspis impolita.*
Fig. 13. „ *reticulata.*
Fig. 14. „ *lamellicornis.*
Fig. 15. *Amerus seychellensis.*
Fig. 16. *Hermannia nasata.*
Fig. 17. *Nothrus prismaticus.*
Fig. 18. „ *seychellensis.*
Fig. 19. „ *scotti.*

Plate 19.

Fig. 20. *Damœus complanatus.*
a. Profile.
Fig. 21. *Damœus retiarius.*
Fig. 22. *Neoleodes rugosus.*
a. Profile.
b. Pseudostigmatic organ.
Fig. 23. *Neoleodes striatus.*
a. Pseudostigmatic organ.
Fig. 24. *Neoleodes femoralis.*
a. Profile.



ACARINA FROM SEYCHELLES



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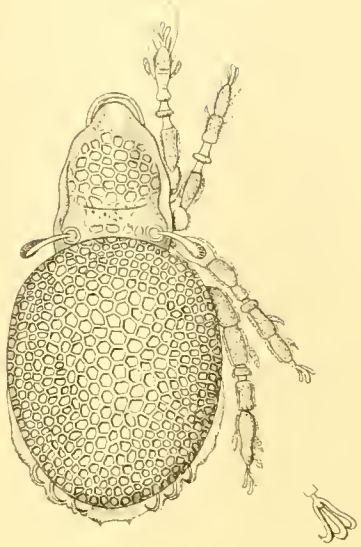

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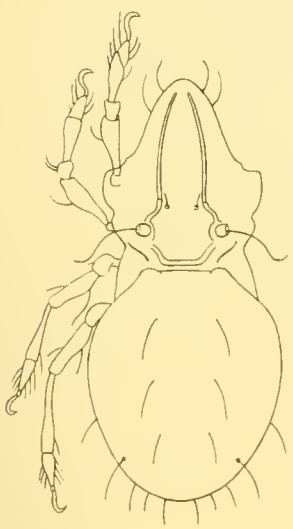

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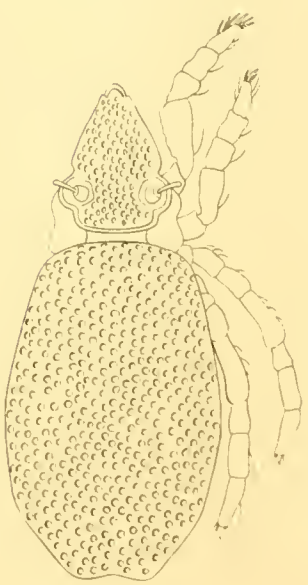

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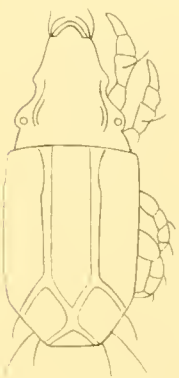

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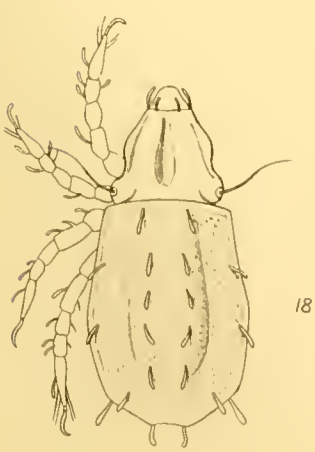

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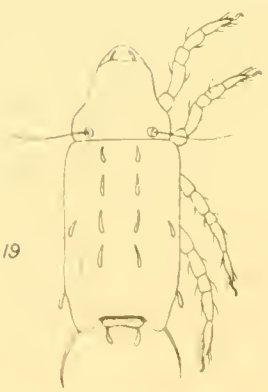

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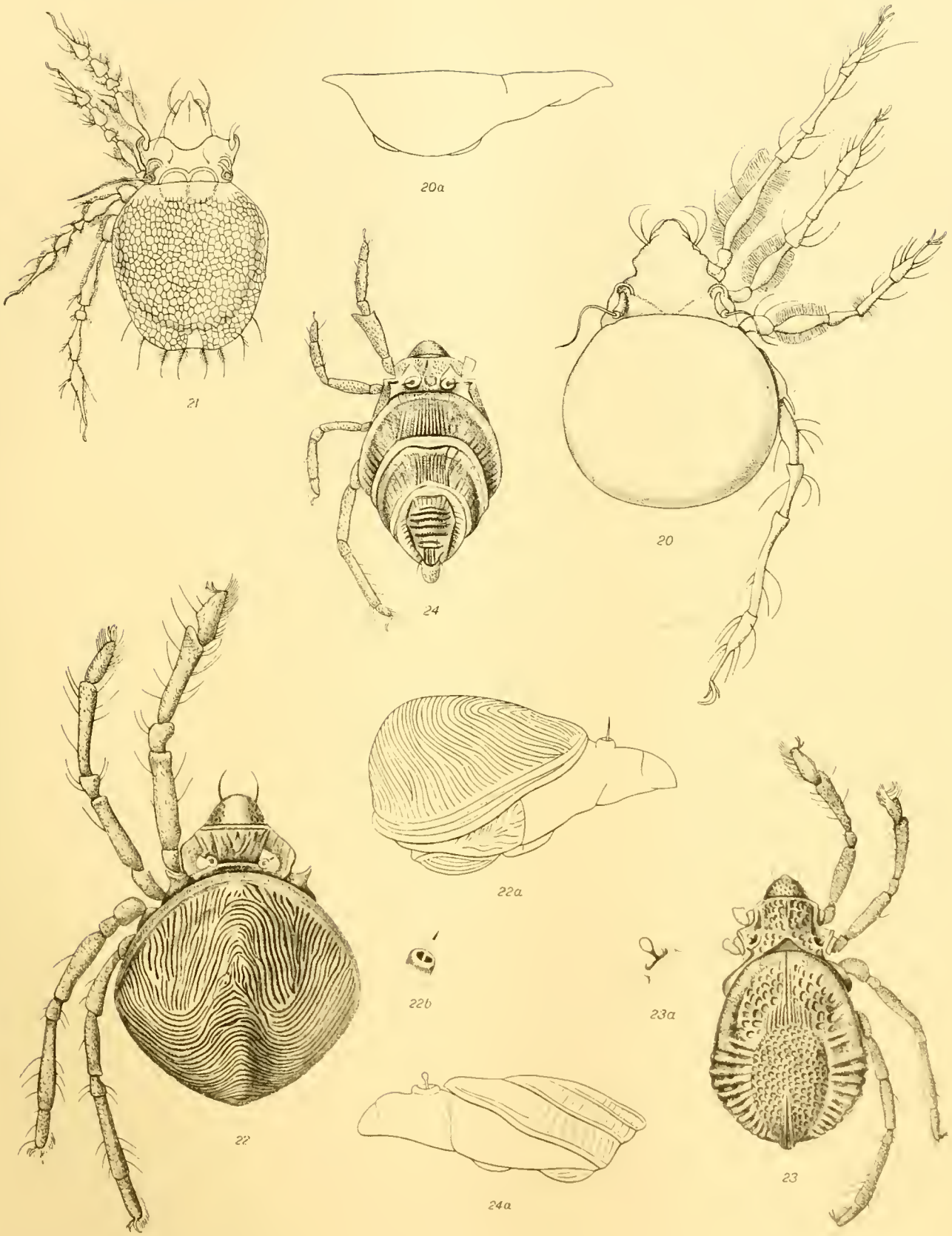
ACARINA FROM SEYCHELLES



ACARINA FROM SEYCHELLES

No. XXI.—COLEOPTERA, COCCINELLIDÆ.

Par le Dr Sicard.

(Communiqué par M. le Professeur J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Lu le 20 Juin 1912.

1. *Cydonia lunata* (Fabr.), ab. *sulphurea* (Ol.); Sicard, Ann. Soc. Ent. France, vol. 78, 1909, p. 79.

Loc. Aldabra (Fryer). Cosmoledo (Thomasset). Madagascar, Afrique Tropicale, etc.

2. *Chilomenes sex-maculata* (Fabr.), ab. *interrupta* (Fabr.).

Loc. Iles Chagos, 1905 : Salomon Atoll, Ile de la Passe, sur la *Scævola Kœnigii*; Peros Banhos; Diego Garcia. Inde, Java, Sumatra, etc.

3. **Exochomus lævipusculus* Weise, Arch. Naturg., 75. 1. 1909, p. 124.

Loc. Aldabra (Fryer). Madagascar.

4. *Rodolia chermesina*, Muls.; Sicard, *op. cit.* p. 116.

Loc. Seychelles. Silhouette: Mont Pot-à-eau, 1000—1500 pieds; Mare aux Cochons. Mahé: Morne Blanc; Port Glaud (500—1000 pieds); Cascade Estate (1000 pieds); Mont Sebert (2000 pieds env.); Long Island. Ile Dennis (Fryer). Madagascar, Iles Mascareignes.

ab. *dionysia* Sicard, *l. c.*

Mêmes localités.

5. *Pullus plutonus*, Muls.; Sicard, *op. cit.* p. 141.

Loc. Seychelles. Silhouette: Mont Pot-à-eau (1500 pieds); Mare aux Cochons, plateau et forêts; Pointe Etienne, endroit cultivé au niveau de la mer. Mahé: endroits cultivés près de Port Glaud (500—1000 pieds); forêts de Morne Blanc et de Morne Pilot (1000—2000 pieds); Mare aux Cochons, forêts (1000—2000 pieds); Cascade Estate (1000 pieds) et forêts environnantes; Anse aux Pins et Anse Royale, au niveau de la mer; Morne Seychellois (1500—2000 pieds); sur les branches de différents arbres abattus. Ile Marie Anne, forêt. Madagascar.

6. *Pullus arrowi*, n. sp.

Oblongo-ovatus, niger, pilosus; elytris macula oblonga lutea in disco notatis; palpis antennis ano pedibusque fulvis. Mas capite rufo.

Long. 0*m*. 0022.

* Kolbe records the widespread *Exochomus nigromaculatus* (Goeze) as having been found in Aldabra: see Abh. Senckenb. Ges., xxvi., 1902, p. 584.—H. Scott.

En ovale oblong, atténué en arrière ; médiocrement convexe, luisant. Tête jaune (♂) ou noire (♀), à peine pubescente ; palpes et antennes roux. Corselet noir ; rétréci en avant, à côtés peu arrondis, sinué à la base ; ponctuation fine, pubescence jaunâtre, fine et peu dense.

Elytres régulièrement ovales, atténués à l'extrémité et arrondis ensemble en arc de cercle assez large ; à ponctuation plus forte et à pubescence plus fournie que le corselet ; noirs avec une grosse tache ovale, jaune paille sur le disque de chacun, couvrant un peu plus du tiers de la longueur et environ les deux tiers de la largeur ; également éloignée de la base et de l'extrémité dans le sens de la longueur et du bord externe et de la suture dans le sens de la largeur.

Dessous noir, avec l'extrémité du dernier segment abdominal et les pieds roux ; plaques fémorales complètes, grandes, couvrant environ les trois quarts du premier arceau du ventre, dont leur partie externe atteint l'angle antéro-externe. Prosternum plat, tronqué, à carinules indistinctes.

Cette espèce est voisine, comme coloration, du *Scymnus cryptogonoides*. Elle s'en distingue, outre les caractères tirés des plaques abdominales, par sa forme plus oblongue et moins convexe, et par la tache régulièrement ovale des élytres.

Elle se distingue du *Nephus seychellensis*, dont la coloration est analogue, par sa tache élytrale plus courte, ses élytres concolores à l'extrémité, sa forme moins aplatie et moins parallèle.

Elle paraît plus rare que les deux espèces précitées.

Loc. Seychelles. Silhouette : Mare aux Cochons (1200 pieds env.).

7. *Scymnus constrictus*, Muls. ; Sicard, Ann. Soc. Ent. France, vol. 78, 1909, p. 143.

Loc. Iles Cargados Carajos : Siren Island (1905). Iles Providence : Ile du Cerf (1905).

Seychelles. Silhouette : presque toute la région des hautes forêts ; environs du Mont Pot-à-eau (1500 pieds), etc. Mahé : plantes herbacées, dans les cultures : Port Victoria ; Cascade Estate ; environs du Morne Blanc (1000 pieds) ; plaine de l'Anse aux Pins et de l'Anse Royale. Ile Félicité. Bird Island (Fryer). Madagascar, Maurice, Comores.

ab. *intercisus* Sicard, *op. cit.* p. 144.

Plus répandu que le type.

Loc. Silhouette : presque toute la région des hautes forêts et des bords de la mer ; Grande Barbe, sur les fleurs de *Tournefortia argentea* ; Mare aux Cochons (plateau et forêts). Mahé : environs de Port Glaud ; Port Victoria ; Cascade Estate (800—1000 pieds) ; plaines de l'Anse aux Pins et de l'Anse Royale ; Anonyme Island.

8. *Scymnus cryptogonoides*, n. sp.

Subrotundatus, convexus, nitidus, pilis albidis sat dense vestitus ; niger ; capite (toto ♂, aut antice ♀), plaga magna discali elytrorum, pedibus, antennis palpisque luteis ; segmento ultimo abdominis epipleurisque prosterni rufis.

Long. 0*m.* 0025.

Subarrondi ; convexe, forme et dessin du *Cryptogonus orbiculus* Gyll. Tête jaune

chez le ♂, noire chez la ♀, avec deux taches triangulaires à la partie antéro-interne des yeux d'un jaune pâle. Antennes et palpes jaunes. Corselet noir, à ponctuation fine et dense, à pubescence très fine et assez clairsemée. Ecusson noir. Elytres plus larges que le corselet à la base, à calus huméral petit, brillant, à ponctuation plus grosse et plus dense que celle du corselet, à pubescence assez longue, blanchâtre, souvent frottée sur la partie convexe, qui est luisante ; noirs, avec sur le disque de chacun une grosse tache d'un jaune paille, semilunaire à convexité postéro-externe, étendue environ du sixième aux trois quarts de la longueur et couvrant à sa partie postérieure les quatre cinquièmes de la largeur, laissant la base, une large bordure suturale élargie en avant, une étroite bordure externe et le quart postérieur noirs.

Dessous noir, avec le dernier segment abdominal et les épipleures du corselet d'un jaune rouge. Carènes du prosternum à peine visibles, très faibles, se rejoignant en avant en ligne courbe étroite. Mésosternum droit en avant ; suture méso-métasternale à peine visible, en ligne droite ; mésosternum couvert de gros points superficiels écartés.

Ligne fémorale prolongée jusqu'aux trois quarts de la longueur, puis parallèle au bord postérieur du premier segment abdominal, effacée vers les trois quarts externes avant d'atteindre le bord latéral.

Loc. Seychelles. Silhouette : hautes forêts ; Mont Pot-à-eau ; Mare aux Cochons, plateau et forêts.

ab. *lunulatus*, nov.

Taches des élytres très grandes, atteignant le bord latéral et ne laissant qu'une étroite bordure suturale noire.

Pieds d'un jaune roux.

Loc. Silhouette : Mare aux Cochons, plateau et forêts.

9. *Nephus seychellensis*, n. sp.

Oblongus, parum convexus, supra niger, pubescens ; elytrorum plaga magna discali limboque apicali luteis ; subtus piceoniger, ultimo segmento abdominis rufo-brunneo ; antennis palpis pedibusque luteis, femoribus posterioribus plus minusve infuscatis.

Long. 0*m*. 0017.

En ovale oblong, peu convexe et semblable comme forme au *Nephus redtenbacheri* Muls., et sans doute au *N. voeltzkowi* Weise, qui m'est inconnu. Dessus noir, avec la tête plus ou moins brunâtre. Antennes et palpes d'un jaune flave. Corselet noir, à peine rembruni en avant. Elytres à peine plus large que le corselet à la base, presque parallèles, largement en ovale aplati à l'extrémité ; noirs, avec une grande tache d'un jaune paille couvrant les deux tiers de la longueur et les trois quarts de la largeur, un peu plus éloignée de la base que de l'extrémité ; cette dernière étroitement d'un jaune rougeâtre. Il reste de la couleur foncière une légère bande suturale et latérale ; calus huméral oblong et saillant, situé sur la partie noire ; ponctuation fine, pubescence blanchâtre, courte et assez dense.

Dessous d'un noir de poix avec l'extrémité de l'abdomen plus claire. Prosternum large, sans carènes, rebordé entre les hanches ; suture méso-métasternale effacée ; premier

segment ventral aussi long que les trois suivants réunis ; plaque abdominale grande, incomplète, ligne fémorale en arc de cercle qui n'atteint pas tout à fait la partie postérieure du premier segment, et lui reste parallèle jusqu'auprès du bord latéral, avant lequel elle est effacée.

Le *N. voeltzkowi* a, d'après la description, la tache plus rousse et le corselet roux avec une tache noire à la base.

Loc. Seychelles. Silhouette : environs du Mont Pot-à-eau (1500 pieds) ; Mare aux Cochons et forêts voisines. Mahé : environs de Port Glaud (500—1000 pieds) et du Morne Blanc (1000 pieds) ; sur les plantes herbacées, dans les endroits cultivés ; Cascade Estate (800 à 1000 pieds) ; plaine voisine de l'Anse aux Pins et de l'Anse Royale ; sur les arbres des Capucins (*Northea*) rabougris au sommet de la Montagne de l'Anse Major (2000 pieds et au dessus).

10. *Nephus oblongo-signatus* (Muls.) ; Sicard, Ann. Soc. Ent. France, vol. 78, 1909, p. 145.

Loc. Iles Cargados Carajos ; Establishment Island et Siren Island (1905).

Seychelles. Silhouette : presque toute la région des hautes forêts ; environs du Mont Pot-à-eau (1500 pieds) ; Mare aux Cochons et forêts voisines. Mahé : environs de Port Glaud (500—1000 pieds), environs du Morne Blanc (1000 pieds) ; sommet du Mont Pilot (2000 pieds) ; sur les plantes herbacées jusqu'à 1000 pieds ; Port Victoria ; Cascade Estate (1000 pieds) ; plaines de l'Anse aux Pins et de l'Anse Royale ; Anonyme Island ; Long Island. Maurice.

ab. *grineræ* (Sicard), *l. c.*

Ne se distingue que par la tache plus petite, arrondie au lieu d'être ovale, et commençant seulement à partir du milieu de l'élytre ou plus en arrière.

Seychelles, même localités, et aussi Bird Island (Fryer). Madagascar.

11. *Sticholotis madagassa* Weise, Arch. Naturg., 75. 1. 1909, p. 124.

Loc. Seychelles. Mahé : Cascade Estate (800—1000 pieds) ; près du Morne Blanc, et dans les terrains marécageux au niveau de la mer ; Long Island. Madagascar.

Phlyctenolotis, n. g.

Corpus oblongum, parvum. Palpi maxillares crassi, articulo ultimo acuto. Caput magnum, insertum, oculis rotundatis, parvis, grosse granulatis. Thorax fortiter transversus, lateribus rotundatis, antice haud angustatis ; pilis brevibus sparsim vestitus. Elytra subparallela, apice rotundata, convexa, glabra, callosa, bullis translucentibus ornata.

Prosternum latum, haud carinatum ; mesosternum antice et postice rectum ; metasternum magnum, longitudinaliter sulcatum, postice rectum. Abdomen 5-segmentatum ; laminæ abdominales extus apertæ ; lineæ ventrales marginem posteriorem segmenti primi attingentes.

Pedes mediocri : unguiculi dente basilari instructi.

Ce genre se distingue de tous les autres par les callosités transparentes des élytres, qui le rapprochent du *Pharoscymnus eburifer* Sic. Il diffère de ce dernier genre par son

corselet très transversal, à peine rétréci en avant, par ses élytres parallèles à repli très étroit, tombant presque droit sur les côtés, glabres; il a le facies du genre *Cephaloscymnus* dont le distinguent ses yeux petits, arrondis en dedans, la forme de ses palpes, sa tête insérée jusqu'aux yeux dans le corselet. Il doit prendre place près du genre *Pharoscymnus* Bedel (*Pharus* auct.).

12. *Phlyctenolotis scotti*, n. sp.

Oblongo-ovatus, rufus, nitidus; capite nigro, elytris brunneo-cœrulescentibus, bullis 4 luteis subpellucidis ornatis; pedibus rufis.

Ovale oblong, d'un roux fauve avec la tête noire et les élytres bleuâtres. Tête grosse, d'un noir luisant passant au brunâtre sur l'épistome et le labre. Front très large. Yeux petits, légèrement ovales, à peine entamés par les joues à leur partie antérieure; antennes rousses, aussi longues que la largeur du front, de onze articles, à massue de 4 articles plus longs que larges, le dernier en triangle à l'extrémité; palpes maxillaires roux, très gros, à dernier article un peu rembruni, aigu, non sécuriforme. Menton très grand, irrégulièrement triangulaire; ponctuation de la tête fine et éparse; pubescence rare, fine et écartée. Corselet très transversal, non rétréci en avant, convexe, roux, à côtés arrondis et légèrement rebordés, à base en arc de cercle large, finement rebordée; échancrure antérieure très grande et très profonde, légèrement convexe au milieu de son bord postérieur, logeant la tête jusqu'à la partie postérieure des yeux: angles antérieurs avancés, aigus, les postérieurs arrondis; ponctuation fine, peu dense sur le disque, plus serrée sur les côtés et surtout au niveau des angles antérieurs; pubescence fine, roussâtre, clairsemée. Ecusson extrêmement petit, en triangle équilateral. Elytres de la largeur du corselet à la base, à peu près parallèles jusqu'aux trois quarts de leur longueur, où ils s'arrondissent en arc de cercle large (pris ensemble) à l'extrémité; très convexes, à côtés abrupts, non explanés, avec un rebord mince, extrêmement étroit, prolongé jusqu'à l'extrémité; d'un brun noir bleuâtre avec une grosse bulle jaunâtre, transparente, couvrant environ le quart antérieur de l'élytre, semilunaire à convexité antérieure, et à peu près également éloignée de la base, de la suture et du bord externe; une deuxième bulle, arrondie, de même couleur, plus petite, au niveau de la déclivité postérieure des élytres, plus éloignée de l'extrémité que de la suture et du bord latéral; ponctuation grosse, simple et assez dense, sauf au niveau les bulles qui sont lisses. Dessous roux, à pubescence assez rare, prosternum large, plan entre les hanches, au niveau desquelles il est fortement rebordé, puis convexe à la partie antérieure, non caréné. Mésosternum plus large en avant qu'en arrière. Métasternum grand, lisse, sillonné longitudinalement, coupé carrément à sa partie postérieure. Abdomen de cinq segments, le premier plus large que les deux suivants réunis. Plaques abdominales incomplètes; ligne fémorale en arc de cercle, rejoignant la partie postérieure du segment avant le milieu en dedans, et confondue ensuite avec elle. Epipleures planes, étroites, pubescentes, prolongées jusqu'à l'extrémité élytrale en se rétrécissant légèrement.

Fémurs longs, dépassant la partie externe des élytres, droits en arrière, convexes en avant, sillonnés; tibias plus courts que le fémur, sillonnés pour recevoir le tarse, qui est large avec des ongles robustes, dentés à la base.

Long. 0*m*. 002.

Loc. Seychelles. Silhouette : Mare aux Cochons et forêts environnantes. Mahé : Cascade Estate (1000 pieds) ; environs de Port Glaud (500—1000 pieds) et du Morne Blanc (1000 pieds).

Xamerpillus, n. g.

Oblongus, convexus, supra pilosus ; palpi maxillares articulo ultimo subcylindrico, antice triangulariter emarginato. Abdomen 5-segmentatum. Prothorax transversus. Elytra subparallela, epipleuris anguste terminatis.

Très voisin du genre *Phlyctenolotis*, dont il diffère surtout par ses élytres pubescents et ses palpes maxillaires à dernier article cylindrique et bidenté au sommet.

13. *Xamerpillus gahani*, n. sp.

Oblongus, supra convexus, pilosus ; niger ; plagis duabus in elytro singulo fulvis ; abdominis segmento ultimo brunneo-rufescente ; epipleuris pedibusque nigris, tarsis dilutioribus.

Long. 0*m*. 0022.

En ovale oblong, non atténué, mais plutôt largement arrondi en arrière avec la déclivité postérieure des élytres abrupte. Noir, pubescent. Tête noire avec l'épistome d'un rouge brun. Antennes noires, palpes d'un brun foncé, à dernier article subcylindrique et fortement échancré au sommet, ce qui le fait paraître bidenté. Yeux arrondis, petits ; front large et légèrement convexe. Prothorax transversal, très convexe, fortement échancré en avant avec le bord postérieur de l'échancrure convexe, finement rebordé sur les côtés et à la base ; à ponctuation forte et assez dense, à pubescence courte, blanchâtre, hérissée. Elytres de la largeur du prothorax à la base ; subparallèles jusqu'aux deux tiers de la longueur, en arc de cercle large à l'extrémité, à déclivité postérieure abrupte, à bords latéraux tombant droit, non explanés, à rebord très étroit et continu, à épipleures étroites, rétrécies à l'extrémité ; à ponctuation semblable à celle du corselet ; pubescence courte, blanchâtre et dense ; noirs à deux taches jaunes : la première semi-lunaire, convexe en avant, droite en arrière, plus rapprochée de la base et de la suture que du bord latéral, la seconde plus petite, située au niveau de la déclivité postérieure des élytres.

Dessous noir ; prosternum large, non caréné ; suture méso-métasternale droite ; métasternum à sillon médian bien marqué, avec deux rangées de gros points le long du bord antérieur. Ligne fémorale se confondant vers les deux cinquièmes internes avec le bord postérieur de l'arceau. Ventre de cinq segments, le premier aussi long que les deux suivants.

Pieds noirs avec les tarses brunâtres. Ongles dentés à la base.

Loc. Seychelles. Silhouette : environs du Mont Pot-à-eau. Mahé : environs de Port Glaud (500—1000 pieds) et du Morne Blanc (1000 pieds) ; hautes forêts du Morne Blanc et de Pilot ; forêts entre Trois Frères et Morne Seychellois (1500—2000 pieds) ; sommet du Mont Sebert (2000 pieds) ; Cascade Estate (1000 pieds) et forêts voisines ; Mare aux Cochons (1000—2000 pieds).

L'absence de Coccinellides phytophages est tout spécialement à noter.

No. XXII.—TERRESTRIAL ISOPODA, PARTICULARLY CONSIDERED IN RELATION TO THE DISTRIBUTION OF THE SOUTHERN INDO-PACIFIC SPECIES*.

By the late Dr G. Budde-Lund, Copenhagen.

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.;
Revised by Rev. T. R. R. Stebbing, M.A., F.R.S.)

(Plates 20—22.)

Read 20th June, 1912.

The collections of Terrestrial Isopoda obtained from the islands of the Indian Ocean during the Sealark Expedition were made in the following localities: Chagos Islands, Cargados, Coetivy, Farquhar, Amirante Islands, and Seychelles.

While collections from the Seychelles Islands have been gathered by different persons, until now no investigation appears to have been made with regard to these animals living in the five first-mentioned localities. Consequently I have set forth here all that I have found belonging to the Isopod-fauna of these islands.

From the Chagos Islands the Sealark Expedition has brought back the following six species:

Nagara nana Budde-Lund, a species found in Madagascar; I have also seen specimens from Java and Sumatra.

Metoponorthus pruinosus (Brandt); this cosmopolitan species is taken in all the islands and in great number.

Alloniscus pigmentatus Budde-Lund; this species, first found in Madagascar, was later taken in many localities on the coasts of the Indian Ocean.

Setaphora pilosa, n. sp. This new species, which I describe below, is related to many described and hitherto undescribed species found in the Indian islands.

Olibrinus pigmentatus, n. sp. This new species, which I describe below together with two other new species, one from Djibouti, the other from the Malay Peninsula, belonging to the same new genus, points as well as the above-mentioned species to the affinity of the fauna with the fauna of the East Indies.

Spherillo parvus Budde-Lund, from Madagascar, is spread over the islands of the Indian Ocean.

* All the footnotes are by the Revisor.

From the Cargados Islands the expedition brought back three species:

Angara lenta Budde-Lund. This species is known from most countries around the Mediterranean Sea; perhaps it is of cosmopolitan distribution.

*Metoponorthus** *pruinosus* (Brandt), a cosmopolitan species.

Trichorhina minutissima, n. sp. Though this species is a new one, I dare not consider it as peculiar to these islands. The species of the genus *Trichorhina* are very tiny animals, and, inhabiting moss and mouldering vegetable refuse, easily escape collectors. Further, because of their white colour they are easily confounded with the young of other species. This species, I think, has a wider diffusion.

From Coetivy Island the expedition has brought back four species:

Angara lenta Budde-Lund.

Metoponorthus pruinosus Brandt.

Setaphora suarezi (Dollfus).

Spherillo parvus Budde-Lund.

The two last species have probably entered from Madagascar; the other two are nearly cosmopolitan.

In the island Farquhar were collected during the expedition the following six species:

Metoponorthus pruinosus (Brandt).

Agnara madagascariensis Budde-Lund.

Alloniscus pigmentatus Budde-Lund.

Aphiloscia annulicornis Budde-Lund.

Setaphora suarezi (Dollfus).

Bethalus simplex (Dollfus).

These species are not peculiar to Farquhar. They all inhabit Madagascar and some extend into East Africa.

From the Amirante Islands are also presented four species, all cosmopolitan:

Angara lenta Budde-Lund.

Cubaris murina Brandt.

Metoponorthus pruinosus (Brandt).

Spherillo parvus Budde-Lund.

Most rich and interesting is the fauna of the Seychelles Archipelago. The first species of terrestrial Isopods brought home by Prof. Möbius were only two, *Cubaris murina* Brandt and *Spherillo parvus* (Budde-Lund (1) p. 28 and p. 25). In the year 1893 M. A. Dollfus† gave a catalogue of the species collected by M. Charles Alluaud, in all seven species. Besides the two species above named, he had brought home *Metoponorthus pruinosus* (Brandt), *Alloniscus pallidulus* Budde-Lund‡, *Pseudophiloscia angustissima* Budde-Lund§, *Ligia exotica* Roux, and *Tylos minor* Dollfus.

* That *Metoponorthus*, Budde-Lund, 1879, is a synonym of *Porcellionides*, Miers, 1877, is explained by Stebbing in "Records of the Indian Museum," vol. vi., pt. 4, p. 188, Sept. 1911.

† Bull. soc. zool. Fr. vol. xviii. p. 186. Paris, 1893.

‡ *Anomaloniscus ovatus* Dollfus.

§ On p. 372 the species by Dollfus supposed to be *Philoscia mina*, Budde-Lund, is stated to be *P. lateralis*.

Subsequent collectors and the Sealark expedition have obtained twelve species new to the fauna of Seychelles, and so the total number of the species found in the Archipelago is to-day twenty:

1. *Spherillo parvus* (Budde-Lund) M.
2. „ *peltatus* Budde-Lund S.
3. „ *maculosus* Budde-Lund S.
4. *Pseudophiloscia lateralis*, n. sp. S.
5. „ *angustissima*, n. sp. S.
6. *Mahehia maculata*, n. sp. S.
7. „ *laticauda*, n. sp. S.
8. „ *bicornis*, n. sp. S.
9. *Cubaris murina* Brandt C.
10. *Pagana dimorpha* (Dollfus) M.
11. *Metoponorthus pruinosus* (Brandt) C.
12. *Nagara cristata* (Dollfus) C.
13. „ *nana* Budde-Lund M.
14. *Alloniscus pallidulus* Budde-Lund M.
15. „ *pigmentatus* Budde-Lund M.
16. *Setaphora ovata*, n. sp. S.
17. „ *pallidemaculata*, n. sp. S.
18. *Aphiloscia annulicornis* (Budde-Lund) M.
19. *Ligia exotica* Roux C.
20. *Tylos minor* Dollfus S.

Among these twenty species the half, 10 species, above marked with "S," are peculiar to Seychelles; four species marked with "C" may be considered as cosmopolitan; and six species marked with an "M" are common to these islands and Madagascar, being regarded as certainly introduced from that country.

It is not only the large number of peculiar species that gives to the fauna of Seychelles its particular stamp. It is rather the character of the species; thus there are three species of a new genus, *Mahehia*, of which no representative is known from anywhere else, and two species of a genus *Pseudophiloscia*, of which species are not found nearer than New Zealand, Upolu, Chile. The species of *Spherillo* and *Setaphora* only point to a connection with the Australasian Islands, while no form points to any connection with Africa, Madagascar being excepted.

From Mauritius are known the following ten species:

1. *Sunniva minor* Budde-Lund.
2. *Spherillo testudinalis* (Budde-Lund).

3. *Spherillo collaris* Budde-Lund.
4. „ *parvus* Budde-Lund.
5. *Angara lenta* Budde-Lund.
6. *Pagana dimorpha* Dollfus.
7. „ *maculosa* Budde-Lund.
8. „ *fissifrons* Budde-Lund.
9. *Metoponorthus pruinosus* Brandt.
10. *Aphiloscia annulicornis* Budde-Lund.

Four species, nos. 1, 3, 6, 7, are known only from Mauritius. The other six species are found in Madagascar and the East Indies.

In my paper on the Isopoda from Madagascar (Budde-Lund (5)) I have recorded 32 species as inhabiting that large island.

L. A. Borradaile in his paper on the Land Crustaceans in the Fauna: Maldives and Laccadives, vol. i., p. 28, has recorded six species from those islands:

Ligia exotica Roux.

Porcellio maldivensis Borradaile = *Agnara madagascariensis* Budde-Lund?

Alloniscus maldivensis Borradaile = *Alloniscus pigmentatus* Budde-Lund?

Philoscia gracilis Budde-Lund? = *Setaphora* sp.

„ sp.

Cubaris murina Brandt.

The descriptions of the new species given by Borradaile are very superficial* and apply to many different species, being without essential characters.

Besides the Isopoda collected by the Sealark Expedition Mr Thomasset during a sojourn at the Aldabra Islands has taken a new species, *Tura angusta*, which I on this occasion describe together with the other species of this genus.

This small collection of the Isopod-Fauna confirms the conclusion I have drawn (Budde-Lund (2), p. 40) that the Seychelles Islands and East Madagascar are remnants of a submerged continent, which occupied a large part of the globe, now to a great extent covered by sea.

While the Seychelles Islands, East Madagascar, Mauritius and Bourbon mark the occidental outline of this submerged continent, the west coast of South America is its oriental outline, confined by the Andes mountains; of the countries between these two outlines some of the East Indian Islands, the Malay Peninsula, East Australia, New Zealand and the Pacific Islands are remnants. In those times certainly North and South America were separated, and several of the West Indian Islands (Cuba, Porto Rico and Jamaica) were belonging to a submerged continent.

* It should be remembered that Borradaile's paper was published in 1901 before the dawn of that new era, in which, as a comparison of Herr Budde-Lund's earlier and later writings clearly testifies, the terrestrial Isopoda have been enabled to claim a far more searching analysis than in earlier times they were accustomed to receive.

Another more recent connection has existed between West Africa and South America and between South Africa and West Australia.

Familia **Oniscidæ**.

Onisci Budde-Lund (1), p. 13, 1885.

Subfamilia **Spherilloninæ** Budde-Lund (2), p. 41, 1904.

Included in this subfamily are a number of genera, *Spherillo*, *Sunniva*, *Saïdjahus*, *Scleropactes*, *Suarezia*, *Arhina*, *Pseudophiloscia*, *Ambounia*, *Pseudarmadillo*, *Acanthoniscus* and *Anaphiloscia*.

I have earlier given the reasons for joining these genera in a subfamily. Of the above-named genera the Sealark Expedition has brought back species of the genera *Spherillo*, *Pseudophiloscia*, and a new genus *Mahehia*.

Genus Spherillo Budde-Lund (2), p. 51 Dana.

(U. S. Expl. Exp., vol. xiii., p. 719, 1853.)

Five species of this genus are found in the Islands of the Indian Ocean. Two of them are only known from Seychelles, one only from Mauritius, the other species are of wide distribution eastwards.

1. *Spherillo parvus.*

Armadillo parvus Budde-Lund (1), p. 25.

Spherillo parvus Budde-Lund (2), p. 91; B.-L. (5), p. 270. Taf. 12, fig. 30—37.

Distribution. Seychelles Archipelago: Mahé, 1600 feet, many specimens; Mt. Harrison at an altitude of 2000 feet; Trois frères, 1500 feet, 17 Nov. 1905: Silhouette a single specimen: Praslin on dry hills, five specimens. Desroches, very abundant. Coetivy, seven specimens. Chagos Archipelago at Coin, Peros, and at Egmont, many specimens.

This species was taken many years ago in Seychelles by Prof. Möbius; later M. Ch. Alluaud found it at Mahé, at Praslin and in Madagascar; also specimens were obtained from Mauritius. In the British Museum, London, are preserved specimens from Cocos-Keeling Island, taken in July 1902 by Mr Wood-Jones.

2. *Spherillo purpurascens*, n. sp.

Cubaris officinalis Stebbing, Willey's Zool. Results, 1900, p. 655.

Oculi mediocres, ocelli magni, numero 13.

Antennarum articulus 1 flagelli duplo brevior quam articulus 2.

Trunci segmentum 1 margine laterali crasso, per totam longitudinem sulcato, post inaequaliter sulcato: lacinia exterior multo major quam lacinia interior; margo posterior utrinque leviter incurvus. Segmentum 2 epimeris ante fissis, lacinia interiore brevi, obtusa; pronotum fere quartæ parti dorsi longitudine æquale; margo posterior utrinque levissime incurvus.

Uropodum endopoditum apicem telsi non attingens; exopoditum minutum, non, nisi desuper, visibile, in fossa laterali scapi positum.

Color fusco et flavo variegatus; interdum fuscus maculis pallidis notatus.

Lg. 13 mm.

Distribution: Isle of Pines; South of New Caledonia.

[*Spherillo purpurascens* is certainly a new species. In the manuscript of the late Mr Budde-Lund, however, this was not expressly stated.]

3. *Spherillo collaris.*

Spherillo collaris Budde-Lund (2), p. 60, 1904.

Mauritius (Mus. Paris).

4. *Spherillo peltatus.*

Spherillo peltatus Budde-Lund (2), p. 78, 1904.

Seychelles Archipelago (Mus. Hamburg).

5. *Spherillo testudinalis.*

Armadillo testudinalis Budde-Lund (1), p. 29, 1885.

Spherillo „ Budde-Lund (2), p. 80, 1904.

Mauritius (Mus. Paris). This species is spread over the greatest part of the Asiatic and Australian islands; also found in Madagascar.

6. *Spherillo maculosus.*

Spherillo maculosus Budde-Lund (2), p. 80, 1904.

Seychelles Archipelago, Mahé (Mus. Hamburg).

Genus Pseudophiloscia Budde-Lund (2), p. 42, 1904.

The discovery in the Seychelles of the two new species described below is very interesting and corroborates my hypothesis concerning ancient continental lands.

I have before recorded three species in this genus: *Pseudophiloscia gracilis* (Budde-Lund) (1), p. 220 and (2), p. 42 from Upolu Island; *Pseudophiloscia fragilis* Budde-Lund (2), p. 43 from New Zealand; *Pseudophiloscia inflexa* Budde-Lund (2), p. 43 from Chili. I should also think the *Paraphiloscia stenosoma* Stebbing*, from New Britain, to be a *Pseudophiloscia*†, whereas the *Philoscia gracilis* Borradaile‡ from the Maldives is certainly not identical with *Ph. gracilis* Budde-Lund but rather a *Setaphora.*

7. *Pseudophiloscia lateralis*, n. sp. (Plate **20**, figs. 1—6.)

Philoscia mina Dollfus (1), p. 188 (neque Budde-Lund), 1893.

* Stebbing, Willey's Zool. Results, 1900, p. 648.

† In agreement with this opinion it should be conceded that *Pseudophiloscia* Budde-Lund, 1904, becomes a synonym of *Paraphiloscia*, Stebbing, 1900, and that Budde-Lund's three species above named should consequently be transferred to the latter generic name.

‡ L. A. Borradaile, Land Crustaceans, Gardiner's Fauna Maldives and Laccadives, i. p. 98.

Superficies sublævis, nitida, setis minutissimis sparse munita.

Oculi magni, angulos anticos capitis utrinque occupantes; ocelli numerosi, densissime congregati, numero plus quam viginti.

Antennæ fere tres quartas partes corporis longitudine æquantes; scapi articulus 2 paulo longior et crassior quam articulus 3; articulus 4 plus duplo longior quam articulus 3, articulus 5 quarta parte longior quam articulus 4. Flagellum paulo longius quam articulus 5 scapi, articulus 1 longior quam articuli 2 et 3 subæquales simul sumpti.

Maxillæ prioris paris lamina exterior dentibus 4 (secundo ceteris multo minore) + 6 (omnibus apice fissis, subæqualibus).

Frons ante non marginata. Epistoma linea transversa in medio leviter procurva.

Trunci segmenta 1, 2 margine posteriore curvato, segmenta 3, 4 margine posteriore subrecto, segmenta 5, 6 leviter segmentum 7 profunde in medio incurva; anguli postici segmentorum 1—4 rotundate obtusi, segmentorum 5—6 subrecti, segmenti 7 rotundate truncati. Segmentum 2 pronoto quarta parte dorsi vix longiore, ægre discreto, utrinque angulos priores laterales segmenti occupante.

Cauda trunco abrupte angustior; omnia segmenta, præsertim segmenta 4 et 5 magna.

Telsum triangulum, lateribus leviter incurvis, post late rotundatum.

Uropodum scapus multo longior quam latior, latere exteriore profunde canaliculato; processus endopoditi non brevior quam scapus; exopoditum duplo longius quam scapus; endopoditum gracile, paulo longius quam scapus.

Color fuscus, in medio trunco maculis et striis oblongis crebratus; segmenta trunci macula laterali rotunda albida, etiam anguli postici segmentorum perlucente albidi.

Long. 8 mm. Lat. 3·5 mm.

Distribution. Seychelles Archipelago: many specimens of this species were obtained during the Sealark expedition: Montagne Alphonse, Cascade, 1800 feet; summit Mt. Sebert; Silhouette. In the Museum at Hamburg are preserved specimens taken by Dr A. Brauer in Mahé, 2—8 May, 1901. It had already been taken in the year 1892 by M. Ch. Alluaud at Mahé, Marianne and Praslin; Dollfus referred it wrongly to *Philoscia mina* Budde-Lund. I have seen the original specimens in the Museum at Paris.

8. *Pseudophiloscia angustissima*, n. sp. (Plate **20**, figs. 7—10.)

Superficies lævis, nitidissima.

Oculi mediocres, angulos anticos capitis utrinque occupantes; ocelli minuti, subconfluentes.

Antennæ duas corporis partes longitudine subæquantes; scapi articulus 2 non longior quam articulus 3, articulus 4 fere duplo longior quam articulus 3, articulus 5 quarta parte longior quam articulus 4. Flagellum scapi articulo 5 longitudine æquale.

Maxillæ prioris paris lamina exterior dentibus 4 (dens primus posterior longissimus, 2 longus, 3 et 4 parvi) + 6 (dens 1 longus, 5 parvus, ceteri mediocres, omnes acuti, integri).

Frons ante non marginata. Epistoma linea transversa recta, infra inter antennulas tuberculo ovali, minuto.

Trunci segmenta 1, 2, 3 margine posteriore curvato, segmentum 4 subtransversum, segmenta 5, 6 levissime, segmentum 7 fortius medio incurvo; anguli postici segmentorum 1, 2, 3 late rotundate obtusi, anguli segmentorum 4, 5, 6 rotundate subrecti, segmenti 7 acutiores.

Cauda trunco abrupte angustior; segmenta angusta post sensim longiora; 1, 2, 3 breviora, 4, 5 longa; epimera inflexa, brevia, non post retroducta.

Telsum plus duplo latius quam longius; basis brevis, transverse rectangula; apex brevis, triangulus, lateribus levissime incurvis, post obtusior.

Uropodum scapus manifesto longior quam latior, latere exteriore late et profunde per longitudinem canaliculato; processus endopoditi nonnihil brevior quam scapus.

Color e fusco griseus maculis et striis crebris albescentibus ornatus.

Long. 5 mm. Lat. 1·5 mm.

Distribution. Seychelles Archipelago: Mahé; Mt Alphonse, 3 Dec. 1905, 3 specimens. The Museum at Hamburg possesses 7 specimens taken by Dr A. Brauer, 2 May, 1901.

9. *Pseudophiloscia brevicornis*, n. sp. (Plate **20**, figs. 11—16.)

Superficies minute et densius hirsuta, nitida.

Oculi minores; ocelli pauci, numero 9—10.

Antennæ breviores, tertiam partem corporis longitudine vix æquantes; scapi articuli ad apicem versus gradatim longiores; flagellum scapi articulo 5 longitudine subæquale, articulo primo ceteris longiore.

Maxillæ prioris paris lamina exterior dentibus 2 (dens prior postremus longissimus, validus) + 4 (dens 2 ceteris subæqualibus nonnihil longior, omnes acuti, integri).

Frons ante non marginata. Epistoma linea transversa tenui, recta, infra inter antennulas transverse elevatius.

Trunci segmenta 1—4 margine posteriore curvato, segmentum 5 margine posteriore subtransverso, segmenta 6 et 7 margine posteriore in medio leviter incurvo; anguli postici segmentorum 1—5 rotundate obtusi, anguli postici segmenti 6 subrecti, anguli postici segmenti 7 acutissimi, apice retroducto.

Cauda trunco non abrupte angustior; segmenta 1—5 lata, subæque longa, epimeris minutis, adpressis.

Telsum plus duplo latius quam longius, post rotundate triangulum.

Uropodum scapus paulo longior quam latior, latere exteriore late et profunde per longitudinem sulcato; processus endopoditi nonnihil brevior quam scapus. Exopoditum semiplice longius quam scapus, apice stylis longissimis ornatum. Endopoditum vix longius quam scapus, apice stylis longis ornatum.

Color flavus crebre fuscomaculatus, in epimeris fuscis macula rotunda flava; antennæ albescentes.

Long. 7·5 mm. Lat. 1·5 mm.

Distribution. New Zealand, Auckland. I have examined a few specimens sent by Mr Suter to the Museum at Hamburg under the name *Oniscus punctatus* Thoms. This adds a second species to the New Zealand fauna and a sixth species to the genus, which ranges from Seychelles to Chili.

Mahehia, nov. gen.

Antennarum flagellum 2-articulatum.

Pleuræ capitis concretæ; linea marginalis verticalis utrinque ante oculos producta, marginem frontalem attingens.

Trunci segmentum primum epimeris integris, infra dente longo, acuto instructis.

Pleopodes omnium parium tracheis instructi.

Telsum triangulum, apice truncato aut acuto.

Uropodes longi, producti; exopoditum longum.

Utrum adsit necne folliculus abdominalis sive marsupium, nescio.

10. *Mahehia maculata*, n. sp. (Plate 20, figs. 17—25.)

Superficies capitis et segmentorum priorum trunci maxime segmenti primi subtiliter et sparse granulata, praesertim in lateribus, post sublævis, nitidissima.

Oculi magni, ocelli numero c. 23.

Antennæ longissimæ, fere $\frac{5}{6}$ corporis longitudinem superantes; scapi articulus 1, brevissimus, articulus 2 brevis, crassior, articulus 3 fere triplo longior quam articulus 2, articulus 4 paulo longior quam articulus 3 et gracilior, articulus 5 nonnihil longior quam articulus 4 gracillimus. Flagellum gracillimum, duas partes scapi articuli 5 longitudine æquans, articulo priore plus duplo breviore quam articulo altero; articulus alter seta apicali instructus.

Frons ante marginata, utrinque lobata; lobi laterales minores, rotundati, linea marginalis crassior in medio leviter procurva; frons utrinque intra lobos laterales tuberculo oblongo, parvo, obliquo instructa. Epistoma convexum, in medio carinis duabus curvatis se attingentibus, a margine frontali ad clypeum ductis, munitum. Tubercula antennaria majora, acutiora, exteriora.

Trunci segmentum 1 post marginem anteriorem sulco profundo per transversum ducto; margo posterior utrinque profunde incurvus, angulis lateralibus acutissimis, retroductis; epimerum infra procul a margine laterali dente longo, acuto instructum. Segmentum 2 pronoto magno, plus tertiam partem dorsi occupante; margo posterior subtransversus, angulis lateralibus rotundate obtusis.

Caudæ segmenta 3, 4, 5, epimeris magnis; epimera segmenti 5 lateribus interioribus parallelis, telso paulo brevioribus. Pleopodes primi paris in utroque sexu parvi, inter se longe distantes.

Telsum triangulum; paulo, fere quinta parte latius quam longius, lateribus leviter incurvis, apice obtusiore, supra per medium ad longitudinem impressum.

Uropodum exopoditum plus quam dimidio longius quam scapus.

Color e nigro fuscus; in trunci segmentis maculæ senæ aut octonæ parvæ rotundæ in seriem transversam, in caudæ segmentis maculæ quaternæ aut senæ sæpe evanidæ positæ; antennæ nigræ.

Long. 19 mm. Lat. 8 mm.

Distribution. Seychelles Archipelago. I have seen four specimens of this species from Mahé. Two specimens were taken during the Sealark expedition, 3 December 1905; the other two, preserved in the Museum at Hamburg, were found by Dr Brauer, 2 May 1900.

11. *Mahehia laticauda*, n. sp. (Plate **20**, fig. 26; plate **21**, fig. 1—6.)

Superficies trunci medii sparse granulata, epimerorum segmentorum trunci et cauda dense squamata.

Oculi majores vel magni; ocelli numero c. 14, posteriores ceteris majores.

Antennæ graciles, longiores, dimidio corpore paulo longiores; scapi articulus 1 brevissimus, articulus 2 brevis, subglobosus, articulus 3 duplo longior quam articulus 2, articulus 4 tertia parte vel plus longior quam articulus 3, articulus 5 quarta parte longior quam articulus 4, gracilis. Flagellum gracile, paulo longius quam dimidium articuli 5 scapi, articulo priore plus duplo breviore quam articulo altero, seta apicali instructo.

Frons ante marginata, utrinque lobata, lobi laterales minores, oblique rotundati, linea marginalis ad mediam frontem fortius procurva. Epistoma in medio convexum, supra eminentia semicirculata marginata infra et ad latera excavatum.

Trunci segmentum 1 sulco transverso collari minus profundo; margo posterior utrinque levius incurvus, angulis lateralibus acutis, non retroductis; epimerum infra procul a margine laterali dente longo, acuto instructum. Segmentum 2 pronoto magno, margo posterior levissime utrinque incurvus. Segmenta 2—7 epimeris magnis, tetragonis, paulum obliquis, angulis lateralibus subrectis.

Caudæ segmenta 3, 4 epimeris permagnis; epimera segmenti 5 valida, oblique tetragona, lateribus interioribus subparallelis.

Telsum trapezoidale vel triangulum apice late truncato, paululo (septima parte) latius quam longius.

Uropodum scapus dimidio longior quam latior, exopodito pæne dimidio longior.

Subunicolor, grisea, sæpe decolorate pallida; antennarum articulus 5 scapi parte apicali albida.

Long. 13 mm. Lat. 7·5 mm.

Distribution. Seychelles Archipelago: Mahé; many specimens taken on "Montagne Alphonse, Cascade, 1800 feet," in the days 30 Nov., 2 Dec., 4 Dec. 1905: Praslin, three specimens from 1000 feet under dead palm leaves.

12. *Mahehia bicornis*, n. sp. (Plate **21**, figs. 7—11.)

Tota superficies densius et scabrius maxime ad latera et in epimeris trunci granulata.

Oculi magni, semiglobosi; ocelli numero c. 22—23.

Antennæ longissimæ; scapi articuli et flagellum ut in *M. maculata*.

Frons ante marginata et utrinque lobata; lobi laterales longiores et angustiores, subtrianguli, apicibus obtusis, linea marginalis frontalis in medio profundius emarginata, ut media frons bicornis fiat. Epistoma medium triangulis elevatis, superiore et inferiore se in medio attingentibus, convexum. Clypeus magnus, declivis, non lobatus.

Trunci segmentum 1 sulco anteriore collari tenui; margo posterior utrinque profundius incurvus, angulis lateralibus acutissimis, non retroductis; epimerum infra dente longo, gracili, acuto. Segmentum 2 pronoto magno. Segmenta 2—7 margine posteriore utrinque levissime incurvo, angulis lateralibus post sensim acutioribus.

Caudæ segmenta 3, 4 epimeris magnis; epimera segmenti 5 epimeris precedentibus angustiora, acute triangula, telso paulo breviora, lateribus interioribus subparallelis.

Telsum triangulum, ejusdem longitudinis atque latitudinis, lateribus levissime incurvis, apice obtusiore, supra per medium ad longitudinem leviter sulcatum.

Uropodum exopoditum multo longius quam scapus.

Color in medio corpore e nigro fuscus, in epimeris trunci caudæque flavus; antennæ flavæ vel albidæ; color interdum pulchre purpureus, lateribus anguste albidis.

Long. 16 mm. Lat. 8 mm.

Distribution. Seychelles Archipelago: Mahé, one specimen from mountain forest, Nov. 1905: Silhouette, five specimens. I have also had many specimens for examination, taken the 2 May 1901 by Dr A. Brauer and preserved in the Museum, Hamburg.

Subfamilia **Oniscinæ**. Budde-Lund (1), p. 75.

This subfamily contains the largest number of the known forms of terrestrial Isopods. In nearly sixty genera are contained about one thousand species. Authors have produced an abundance of new species on very superficial descriptions. These are very often quite incorrectly placed, because the external characters on which the affinities are founded are often without any value.

I have lately in a paper ((7), p. 8) given hints, which should certainly lead to the understanding of the affinities between the numerous genera. By later examinations of the given characters and of other new ones, I have reached so far as to think that I can give a survey of the genera, not only useful for determination but also in the main points in accord with a natural system.

Subgenus Cubaris Brandt, Bull. Soc. Nat. Moscou, vol. vi. p. 189, 1833. Budde-Lund (6), p. 54, 1909.

13. *Cubaris murina.*

Cubaris murina Brandt, Conspectus, p. 28, 1833.

Armadillo murinus Budde-Lund (1), p. 27; (2), p. 119. Tab. X. figs. 20—22.

Cubaris murina Budde-Lund (6), p. 54.

Seychelles Archipelago: Silhouette and Curieuse Island very abundant: Praslin, Cascade, 700 ft.; Mahé, on Mt. Harrison, alt. 2000 ft.; Trois Frères, 1500 ft., the 17th Nov. 1905: Desroches, very common in sand hills. Already Prof. Möbius had taken this species in the Seychelles, also M. Ch. Alluaud in Mahé and Marianne (sec. Dollf.). Specimens from Mahé are also preserved at the Museum, Hamburg, found by Dr A. Brauer.

Concerning the wide distribution of this species, consult the *l.c.*, 2, p. 119, where all the hitherto known localities are mentioned. I can add that specimens have been obtained from Cocos-Keeling Island (Mr Wood-Jones in Museum, London).

Genus Porcellio Latreille, Hist. Nat. Crust. et Ins., vol. vii., p. 45, 1804.
Budde-Lund (5), p. 280.

Subgenus Tura Budde-Lund (5), p. 282, 1908.

During his stay at the Aldabra Islands in 1907, Mr H. P. Thomasset took several specimens of a little new species belonging to this genus. Till then I knew only one species, also from the Aldabra Islands, taken by Prof. Voeltzkow, who had secured it also in N. Madagascar. Subsequently I have seen two more new species from Abyssinia; later on I give a review of all these nearly related species.

14. *Tura angusta*, n. sp.

Superficies squamis minutissimis dense obtecta.

Frons cum epistomate superiore leviter producta, crista squamarum minutissimarum ante marginata; processus laterales minores, late rotundati.

Trunci segmenta 1, 2, 3 margine posteriore curvato, segmentum 4 margine posteriore subrecto, segmenta 5, 6, 7 margine posteriore in medio fortius incurvo; anguli laterales posteriores segmentorum 1, 2, 3 late rotundate obtusi, segmenti 4 rotundate subrecti, segmentorum 5, 6, 7 acutiores.

Caudæ epimera segmentorum 3, 4, 5 longiora, angusta, acuta, subadpressa.

Telsum breve, triangulum, epimera segmenti 5 satis superans, lateribus fortiter incurvis, apice acutissimo.

Color e fusco brunneus, obscure pallide maculatus.

Long. 4·5 mm. Lat. 2 mm.

Distribution. Aldabra: several specimens (H. P. Thomasset).

15. *Tura testacea.*

Tura testacea Budde-Lund (5), p. 282. Tab. 14, fig. 1—14, 1908.

Superficies squamis minutis dense obtecta.

Frons media cum superiore epistomate leviter bulbose producta, ante obscure marginata; processus laterales rotundate obtusi.

Trunci segmenta 1, 2, 3 margine posteriore curvato, segmenta 4—7 margine posteriore in medio leviter incurvo; anguli laterales posteriores segmentorum 1, 2, 3

late rotundate obtusi, segmenti 4 rotundate subrecti, segmentorum 5, 6, 7 acutiores, subrecti.

Caudæ epimera segmentorum 3, 4, 5 breviora, latiora, distantia.

Telsum breve, triangulum, duplo latius quam longius, epimera segmenti 5 nonnihil superans, lateribus leviter incurvis, apice acutiore.

Unicolor, testaceus.

Long. 6—7 mm. Lat. 3—3·7 mm.

Distribution. Aldabra. Majunga in W. Madagascar (Museum, Berlin).

16. *Tura albipennis*, n. sp.

Superficies squamis minutissimis sparsius obtecta.

Frons ante leviter producta, ab epistomate linea squamarum minus manifesto discreta; processus laterales majores, oblique rotundati.

Trunci segmentum 1 margine posteriore curvato; segmenta 2—3 margine posteriore subrecto vel levissime curvato; segmenta 4—7 margine posteriore post sensim in medio magis incurvo; anguli laterales posteriores segmentorum 1, 2, 3 rotundate obtusi, segmentorum 4—7 acuti.

Caudæ segmentorum 3, 4, 5 epimera latiora, acuta, distantia.

Telsum late triangulum, epimera segmenti 5 nonnihil superans, lateribus leviter incurvis, apice acuto.

Uropodum scapus telso multo brevior; exopoditum breve, vix duplo longius quam latius.

Unicolor e flavo brunneus; antennæ albæ.

Long. 7 mm. Lat. 4 mm.

Distribution. Abyssinia, near Harrar and at Dire-Danah, 5 specimens taken by Herr E. Wache preserved in the Museum, Hamburg.

17. *Tura laticauda*, n. sp.

Superficies squamis crassioribus densissime obtecta.

Antennarum scapi articuli ad longitudinem sulcati.

Frons ante cum superiore epistomate fortius producta et marginata; processus laterales majores, prominentes, latere interiore rotundato; epistoma convexum, infra linea transversa obscuriore in medio procurva munitum.

Trunci segmenta 1, 2 margine posteriore curvato, segmentum 3 margine posteriore subrecto, segmenta 4—7 margine posteriore post sensim in medio magis incurvo; anguli laterales posteriores segmentorum 1, 2 late rotundati, segmenti 3 rotundate subrecti, segmentorum 4—7 post gradatim acutiores.

Caudæ epimera segmentorum 3, 4, 5 breviora, latiora, distantia.

Telsum breve, triangulum, epimera segmenti 5 vix superans, lateribus fortius incurvis, apice acuto.

Unicolor, e testaceo fuscus.

Long. 5·5—6·5 mm. Lat. 3·2—3·5 mm.

Distribution. Abyssinia, Rio Faressa (Mission du Bourg de Bozas de Feltner, Juin 1901, 4 specimens in Museum, Paris); Arussi Galla, at Aduabeba in "Hanasch Thal," 2 specimens (O. Neumann in Museum, Berlin).

Perhaps the following species belongs to this genus: *Leptotrichus inquilinus* Koelbel, Wasmann, Verzeichn. myrmecoph. u. termitoph. Arthrop. Berlin, 1894, p. 221; from Somaliland.

Subgenus Pagana Budde-Lund (5), p. 287, 1908.

18. *Pagana dimorpha.*

Metoponorthus dimorphus Dollfus, Mém. Soc. Zool. Fr. viii., p. 184, 1895.

Pagana dimorpha Budde-Lund (5), p. 288, Taf. 15, fig. 1—10.

Seychelles Archipelago. I have only seen the rudiments of a single specimen from "Baie Praslin, 1876," taken by M. de l'Isle (Mus. Paris). The species is also found at Réunion and Mauritius.

The other two known species of the genus, *Pagana maculosa*, Budde-Lund (5), p. 288, and *P. fissifrons*, Budde-Lund (5), p. 289, are found only in Mauritius.

Subgenus Angara Budde-Lund (4), p. 5, 1908.

19. *Angara lenta.*

Lyprobius lentus Budde-Lund (1), p. 230.

Leptotrichus lentus Dollfus, Mém. Soc. Zool. Fr., ix. 542, 1896.

Angara lenta Budde-Lund (4), p. 7, Tab. 1, fig. 1—16.

The expedition has brought back specimens from the following localities: Cargados Islands, 5 specimens: Coetivy Island, 1 specimen: Desroches Atoll, 5 specimens.

This species seems to be cosmopolitan. I have seen specimens from Italy, Algeria, Egypt, Greece at Mykenæ (17. III. 1905, Dr R. Schütt in Mus. Hamburg), Port au Prince (7. V. 1894, 1 specimen in Mus. Hamburg), Progreso (20. X. 1905, 1 specimen, physician C. G. Budde-Lund), Mauritius (Dr Emmery, in Mus. Paris), Chester (Mr Beresford).

Subgenus Metoponorthus Budde-Lund 1879.

20. *Metoponorthus pruinosus.*

Porcellio pruinosus Brandt, Consp., p. 19.

Metoponorthus pruinosus Budde-Lund (1), p. 169.

This cosmopolitan species, spread world-wide, inhabits most of the islands of the Indian Ocean. The Sealark Expedition brought back specimens from the following localities: Chagos Archipelago: Coin, Peros; Salomon; Egmont; Diego-Garcia. Cargados Archipelago, Siren Island, very abundant. Farquhar, 30 Sept. 1905. Amirante Archipelago, Eagle Island, 17 Oct. 1905. Seychelles Archipelago: Praslin; Mahé, Trois Frères, at an altitude of 1500 feet, and Mt. Harrison, 2000 feet; Bird Island. Coetivy.

Subgenus Agnara Budde-Lund (5), p. 286, 1908.

21. *Agnara madagascariensis.*

Metoponorthus madagascariensis Budde-Lund (1), p. 189.

Agnara madagascariensis Budde-Lund (5), p. 286. Taf. 14, figs. 48—54.

Farquhar Island, 30 Sept., 1905, a few specimens. This species seems not to be rare in North Madagascar.

Subgenus Bethalus Budde-Lund (6), p. 54, 1909.

22. *Bethalus simplex* (Plate **21**, figs. 12—15).

Armadillo simplex Dollfus, Mém. Soc. Zool. Fr., viii. 180, text-fig. 1, 1895.

„ „ Budde-Lund (2), p. 132.

Distribution. Only two defective specimens were taken at Farquhar, 30 Sept. Certainly this species was imported from Madagascar, where found by M. Charles Alluaud on "Montagne d'Ambre."

To supplement the description given by Dollfus, *l.c.*, I add a few essential characters; I also give drawings of other characteristic and instructive features.

Trunci segmentum 2 pronoto fere quintam partem dorsi æquante.

Pleopodes primi paris feminæ parvi, inter se longe distantes, area operculari subnulla.

Subgenus Nagara Budde-Lund (5), p. 284, 1908.

23. *Nagara cristata.*

Porcellio cristatus Dollfus, Notes fr. Leyden Mus., xi., 1891, Taf. v. fig. 2.

Nagara cristata Budde-Lund (5), p. 284, Taf. 14, figs. 27—39.

Seychelles Archipelago; eight specimens, all females, were collected at Mahé, at an altitude of 1600 feet.

This species is obtained also in Madagascar and seems to be widely spread over the countries within the warm zone. I have never seen a male specimen of this species.

24. *Nagara nana.*

Nagara nana Budde-Lund (5), p. 285, Taf. 14, figs. 40—47.

Seychelles Archipelago: one specimen was found at Praslin, dry hills; in the museum of Paris is also one specimen from Praslin. Chagos Archipelago: two specimens from Egmont, and four specimens from Coin, Peros.

Formerly, this species was only known from Madagascar; lately I have seen specimens from Java (Buitenzorg 24. II. and 2. III., Tjibodas 25. III. 04, Prof. K. Kraepelin in Mus. Hamburg), Singapore (Mus. Hamburg), Ceylon at Mahaväliganga (Dr G. Duncker 16. VIII. 09, in Mus. Hamburg), Formosa at Takao (Dec. 07, Mr H. Sauter in Mus. Hamburg). The species seems to be widely spread.

Genus Trichorhina Budde-Lund (5), p. 293, 1908.

The species of *Trichorhina* are tiny Isopods, not exceeding 2—3 mm. in length; it is only natural, therefore, that they should often escape being taken by naturalists, most likely because of their likeness to young ones of other Isopods.

The Sealark Expedition brought back a rather large number of specimens of a species, which I class in this genus; while most of the characters of this species are confluent with the characters of the genus, given in the above-cited paper, the first pair of maxillæ presents a remarkable variation as to the teeth.

Such differences as to this pair of the trophi I have also observed in other species belonging to this group of Isopods, and I give a review of the species known by me, based on these relations.

Besides that the whole surface of the animal has a characteristic cover of tiny setaceous scales, found on all the species; an essential character may also be had from the mandibles, the inferior seta having only two or three branches and the interior lobe of the left mandible having a row of small papillæ (Plate **21**, fig. 18).

Together with the small species from the Siren Island, Cargados, brought back by the expedition, I describe below another new species from Mauritius. Many years ago I got a single small specimen of a species for which I could find no place in my system until now; it was brought to Denmark on a sailing ship carrying a cargo of sugar.

Conspectus specierum.

Maxillæ prioris paris lamina exterior:

a. Dentibus 4 + 5 (dentes 1, 2 apice fisso, dentes 3, 4, 5 serrati).

1. *Trichorhina minutissima*, n. sp.
2. *Trichorhina micros*, n. sp.

aa. Dentibus 4 + 4 (dentes 1, 3 apice fisso, dentes 2, 4 integri).

3. *Trichorhina albida* Budde-Lund (5), p. 294, Taf. 17, figs. 5—8.

aaa. Dentibus 3 + 4 (dentes 1, 2, 3 apice fisso, dens 4 integer).

4. *Trichorhina tomentosa* Budde-Lund.
5. *Trichorhina quisquiliarum* Budde-Lund.

The two first species, *Tr. minutissima* and *Tr. micros*, I describe below. Of *Tr. albida* I have only seen one specimen, described in the cited treatise, and I cannot add any new point, whereas I give below new descriptions of the two species *Tr. tomentosa* and *Tr. quisquilianum*, which I earlier described and placed in the genus *Alloniscus*.

Alloniscus papillosus Budde-Lund, Entom. Medd. 1893, p. 193 and *Alloniscus ambiguus* Budde-Lund, ibid., p. 124, both species from Venezuela, which I referred (Budde-Lund (5), p. 293) to the genus *Trichorhina*, are in the mouth-parts so different from this genus, that I now place them in a new genus, *Gedania*, which has several representatives, not yet described, in South America. However I should think that the *Platyarthrus simoni* Dollfus (Ann. Soc. ent. Fr., lxii., p. 342) from Venezuela is a *Trichorhina*.

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25. *Trichorhina minutissima*, n. sp. (Plate **21**, figs. 16—24).

Superficies squamis minutis et setis minutissimis in marginibus clavatis dense obtecta.

Oculi parvi; ocelli numero 6—7, fortius nigropigmentati.

Antennæ breviores, scapi articuli 2, 3, 4 subæque longi, articulus 5 ceteris paulo longior; flagellum articulo 5 scapi vix brevius; articulo priore duplo vel plus breviore quam articulo altero.

Frons ante marginata; linea marginalis utrinque ante oculos paulum producta; epistoma supra convexum, infra inter antennulas tuberculo semicirculato.

Trunci segmentum 1 margine posteriore fortius curvato, segmentum 2 margine posteriore levius curvato, segmenta 3 et 4 margine posteriore subtransverso, segmenta 5 et 6 margine posteriore in medio leviter incurvo, segmentum 7 margine posteriore in medio fortiter incurvo. Anguli laterales posteriores segmentorum 1, 2, 3, 4 rotundate obtusi, anguli laterales posteriores segmentorum 5, 6, 7 rotundate subrecti.

Caudæ segmenta 3, 4, 5 epimeris mediocribus, segmentorum 3 et 4 acutioribus, segmenti 5 obtusioribus.

Telsum triangulum, lateribus leviter incurvis, apice acuto, epimera segmenti 5 paulum superans.

Uropodum scapus telso brevior, latere exteriore ad longitudinem fisso; exopoditum plus duplo longius quam scapus, teres, latere exteriore ad longitudinem sulcato; endopoditum satis brevius et multo tenuius quam exopoditum.

Unicolor, albida.

Long. 2·5—3 mm. Lat. 1—1·25 mm.

Distribution. Cargados; several specimens were taken in Siren Island during the Sealark Expedition.

26. *Trichorhina micros*, n. sp. (Plate **21**, figs. 25—27).

Superficies squamis clavatis minutissimis sparsius obtecta.

Oculi parvi; ocelli pauci, numero c. 3—4, ægre pigmentati.

Antennæ...

Frons ante marginata; linea marginalis tenuis in medio leviter producta; frons utrinque in processum obtusum producta; epistoma convexum, supra linea elevata transversa in medio procurva, inter processus laterales frontales ducta, infra inter antennulas tuberculo oblongo parvo, in medio coarctato instructum.

Trunci segmenta marginibus posterioribus et angulis lateralibus eodem modo fere ut in *Tr. minutissima* formatis.

Caudæ segmenta 3, 4, 5 epimeris mediocribus, acutioribus, subadpressis.

Telsum triangulum, epimera segmenti 5 paulum superans, quarta parte latius quam longius, lateribus subrectis vel levissime incurvis.

Uropodum scapus latere exteriore subintegro.

Color albidus.

Long. 2·3 mm. Lat. 1 mm.

Distribution. Mauritius; I have only seen one specimen belonging to my collection.

27. *Trichorhina tomentosa* (Plate **22**, figs. 1—5).

Alloniscus tomentosus Budde-Lund, Ent. Med. 1895, p. 126.

Bathytropa thermophila Dollfus, Feuil. Jeun. Nat., s. 3, v. 26, p. 94, text-fig. 2, 1896.

Superficies squamis vel setis clavatis minutissimis dense obtecta; margo posterior capitis et omnium segmentorum trunci caudæque serie squamarum majorum setis minutis interpositis munitus.

Oculi simplices, minuti, ægre pigmentati.

Antennæ breviores, dimidio corpore breviores; scapi articulus 4 paulo longior quam articulus 2; flagellum scapi articulo 5 longitudine æquale, articulo priore plus duplo breviore quam articulo altero.

Frons linea marginali squamarum clavatarum subrecta, in medio levissime producta, ab epistomate discreta; processus frontales laterales parvi, rotundati. Epistoma supra cum fronte productum, linea transversa elevata in medio subrecta utrinque sinuate recurva, infra tuberculo rotundate tetragono inter antennulas munitum; clypeus magnus, porrectus.

Trunci segmentum 1 margine posteriore curvato, segmenta 2, 3 margine posteriore subrecto, segmenta 4—7 margine posteriore in medio leviter incurvo; anguli postici laterales segmentorum 1—4 rotundate obtusi, segmentorum 5, 6 subrecti, segmenti 7 acutiores. Segmenta 2, 3, 4, stria suturali manifesta in femina.

Caudæ segmenta 3, 4, 5, epimeris majoribus, triangulis, latere exteriore curvato.

Telsum breve, triangulum, duplo vel plus latius quam longius*, epimera segmenti 5 paululum superans, lateribus subrectis, apice obtuso.

Unicolor, albida vel ex albido grisea.

Long. 3—3·5 mm. Lat. 1·3—1·5 mm.

Distribution. Jamaica at Kingston (1905, C. Gagzo in Mus. Hamburg.). Venezuela (Mus. Kjöbenhavn). Ecuador at "Purnio ob Magdalena" (Bürger in Mus. Göttingen); Paris (Dollfus), Haïti, at Port au Prince (Nepperschmidt in Mus. Hamburg.); Kew Garden, London (Bagnall), Naranjito 9. III. 01 (V. Ortoneda), Guayaquil (F. v. Buchwald, 10. VIII. 03, Mus. Hamburg.).

28. *Trichorhina quisquiliarum* (Plate **22**, fig. 6).

Alloniscus quisquiliarum Budde-Lund, Ent. Med., 1895, p. 125.

Tota superficies densius setis clavatis obtecta; margo posterior omnium segmentorum serie papillarum minutissimarum ornatus.

* Dollfus describes the telson as "aussi long que large," and fig. 5 in pl. 22 of this Memoir represents it far less than twice as broad as long, with incurved sides.

Oculi parvi ; ocelli pauci, numero c. 6, quorum solum bini pigmentati.

Antennæ corporis dimidium longitudine subæquantes ; scapi articuli tres priores inter se longitudine subæquales, articulus 4 sesqui longior quam articulus 3 ; flagelli articulus prior altero fere triplo brevior.

Processus frontales laterales parvi, obliqui ; epistoma convexum cum fronte paulum productum, infra inter antennulas linea transversa sinuata carinatum.

Trunci segmenta duo priora margine posteriore curvato, segmentum 3 margine posteriore subtransverso.

Caudæ segmenta 3, 4, 5, epimeris brevioribus et latioribus.

Telsum breve triangulum, epimera segmenti 5 vix superans, plus duplo latius quam longius*, lateribus late incurvis*, apice acutiore.

Unicolor, alba.

Long. 2·8—3 mm. Lat. 1·2—1·3 mm.

Distribution. Venezuela.

Alloniscus (Budde-Lund (1), p. 224), Dana, Pr. Ac. Philad. vol. vii., p. 176, 1856.

29. *Alloniscus pigmentatus* (Plate **22**, fig. 7).

Alloniscus pigmentatus Budde-Lund (1), p. 227 ; (5), p. 297, Taf. 15, figs. 23—38.

Chagos Archipelago : Coin, Peros, three ; Egmont, eight specimens. Farquhar, four specimens, 30 Sept. 1905. Providence, six specimens. Desroches, one specimen. Aldabra Isl. (H. P. Thomasset). Mahé (Mus. Paris).

This species is very common in Madagascar, and is found in many localities in the East Indies.

I give a figure of the exterior lobe of the first maxillæ, because I have seen that it bears a little appendix not before observed.

30. *Alloniscus pallidulus.*

Alloniscus pallidulus Budde-Lund (1), p. 228, 1885.

Anomaloniscus ovatus Dollf. (1), p. 187, text-fig. 2*a*, *b*, *c*, 1893.

Distribution. Seychelles : Mahé (Anse Royale) sec. Dollfus l.c.

I have not seen specimens of this species from Seychelles, but I have no doubt that the specimens described by Dollfus as *Anomaloniscus ovatus* belong here.

Alloniscus pallidulus is very common in Madagascar; I have seen specimens taken at "Fort Dauphin," "Vynang du Maramboro," "Tamatave," "bords de la Tarasy," "près du lac d'Anongy," "Androhomana dans grotte," "Baie d'Antongil côte Est" (M. Ch. Alluaud in Mus. Paris), at Isl. Ste. Marie (Professor Voeltzkow in Mus. Berlin), at Tamatave (Herr A. O'Swald in Mus. Hamburg). One specimen taken at Fort Dauphin has an extraordinary size, 19 mm. long by 12 mm. broad.

A third species, *Alloniscus brevis* Budde-Lund, has been taken at the Comoro Islands (Budde-Lund (5), p. 298, pl. 15, figs. 39, 40); the other species of this genus are indigenous in the East Indies and Australasia.

* Fig. 6 in pl. 22 does not agree with these characters.

Alloniscus maldivensis Borradaile (Land Crustaceans in Gardiner's Fauna Maldives and Laccadives, vol. i., p. 98, text-figs. 2, 3*a*, *b*, 1901) from the Maldive Archipelago is scarcely different from *All. pigmentatus*; the description gives no information*.

Genus Setaphora (Budde-Lund (5), p. 290), 1908.

In the quoted paper I have given the provisional characters of this genus which I have separated from the large genus *Philoscia*.

Of the species of *Philoscia*, registered in Crust. Isop. Terr. only one species, *Ph. angusticauda* Budde-Lund (1), p. 216, from "Borneo," has to be placed in the genus *Setaphora*. But of species of *Philoscia* afterwards described the following belong to this genus:

Ph. lubricata Budde-Lund (Ann. Mus. Civ. Gen. 5. 2, v. 14, p. 610), from "Burmah."

Ph. comta Budde-Lund (ibid., p. 611), from Burmah.

Ph. cæca Budde-Lund (ibid., p. 611), from Burmah.

Ph. truncatella Budde-Lund (Proc. Zool. Soc. Lond. 1902, p. 379), from "Malay Peninsula."

Ph. incurva Budde-Lund (ibid., p. 380), from "Malay Peninsula."

Ph. suarezi Dollfus (Mém. Soc. Zool. France, v. 8, p. 185), from "Madagascar, East Africa."

Ph. laticeps Bagnall (Ann. and Mag. Nat. Hist., ser. 8, v. 1, p. 429), "Europe," imported? and I dare say also the following:

Ph. truncata Dollfus (Weber, Reise Niederl. Ost. Ind. iv., p. 376), from Celebes and Flores.

Ph. variegata Dollfus (ibid., p. 377), from Celebes.

Ph. weberi Dollfus (ibid., p. 378), from Sumatra.

Ph. cinctella Dollfus (ibid., p. 378), from Celebes.

Ph. sundaica Dollfus (ibid., p. 379), from Sumatra and Java.

Ph. pallida Dollfus (ibid., p. 380), from Java.

Ph. alba Dollfus (ibid., p. 381), from Celebes.

Ph. lifuensis Stebbing (A. Willey's Zool. Results, v., 1900, p. 648).

Besides the three new species described below, I know about twenty undescribed species of the genus *Setaphora* from different localities, most of them from the East Indies and the Indian islands.

31. *Setaphora ovata*, n. sp. (Plate **22**, figs. 8—13).

Superficies lævis, nitida, vix punctata.

Oculi mediocres, ocelli dense congregati, numero c. 20.

* The description in fact agrees closely with that given in 1885 without figures by Budde-Lund for his *A. pigmentatus*, except that the length of that species is stated to be 10 mm., while the longest specimen of *A. maldivensis* measured only 3·5 mm.

Antennæ duas corporis partes longitudine vix æquantes ($\frac{8}{14}$); flagellum scapi articulo 5 non longius, articuli subæquilongi.

Caput fere duplo latius quam longius. Frons ante non marginata. Epistoma supra planum, linea transversa solita in medio paululo procurva.

Trunci segmenta 1 et 2 margine postico valde curvato, segmentum 3 margine postico leviter curvato, segmenta 4, 5, 6, 7, margine postico medio sensim magis incurvo. Anguli externi segmenti 1 late rotundati, segmenti 2 rotundate obtusi, segmenti 3 obtusi, segmenti 4 subrecti, segmentorum 5, 6, 7, sensim acutiores. Segmentum 2 pronoto $\frac{1}{4}$ dorsi non superante, ad latera majore, angulos laterales anticos late occupante.

Cauda corpore non abrupte angustior; segmenta longitudine subæqualia, epimeris paulum distantibus.

Telsum breve, triplo latius quam longius, triangulum post rotundatum.

Uropodum scapus latere exteriore ad longitudinem canaliculato, processus endopoditi nonnihil brevior quam scapus.

Color e brunneo violaceus, in dorso sæpe pallide evanescens, maculis albidis conspersis, ad latera macula parva rotunda in trunci segmentis 1—7, anguli postici epimerorum sæpe perlucentes; pedes pallidi, antennæ brunneæ, radice flavo.

Long. 7·5 mm. Lat. 3·5 mm.

Distribution. Seychelles, some specimens taken by Dr A. Brauer under palm leaves at Mahé, 2—8 May 1901.

32. *Setaphora pallidemaculata*, n. sp. (Plate **22**, figs. 14—18).

Superficies lævis, nitida, vix punctata.

Oculi mediocres, angulos anticos capitis utrinque occupantes; ocelli dense congregati, numero c. 20.

Antennæ tres quartas partes corporis longitudine æquantes; flagellum articulo 5 scapi longitudine æquale, articulus 1 articulis 2 et 3 subæqualibus simul sumptis fere longior, articulus 3 stylo apicali dimidio articulo longitudine subæquali munitus.

Frons ante non marginata. Epistoma supra in medio carina ad longitudinem ducta leviore, inter margines superiores foraminum antennarum linea tenui elevata transversa in medio leviter procurva ducta.

Trunci segmentum 1 linea collari simplice, ad angulum anticum segmenti utrinque ducta, area articulari capitis solum antica minima; margo posterior valde curvatus, angulis externis late rotundatis; anguli antici segmenti late rotundate obtusi. Segmentum 2 pronoto $\frac{1}{4}$ dorsi paulum superante, ad latera majore, angulos anticos late occupante; margo posterior leviter curvatus, angulis externis late rotundatis. Segmenta 3 et 4 margine postico subrecto vel leviter curvato, angulis externis late rotundatis. Segmenta 5, 6, 7, margine postico medio post sensim magis incurvo, angulis segmenti 5 obtusis, segmentorum 6 et 7 acutioribus. Stria suturalis epimeri in femina manifesta in segmentis 2, 3, 4.

Caudæ segmentum 1 subobtectum, segmentum 2 breve, segmenta 3, 4, 5 majora; epimera segmenti 3, 4, 5 parva, adpressa, acuta, retroducta.

Telsum breve triangulum, post rotundatum.

Uropodum scapus latere exteriore ad longitudinem canaliculato, processus endopoditi nonnihil brevior quam scapus.

Color e griseo vel e fusco violaceus, maculis et striis parvis dorsalibus albidis; anguli postici trunci segmentorum pellucide albidi; pedes grisei leviter violaceo picti.

Long. 10—12 mm. Lat. 4—4·5 mm.

Distribution. Seychelles; the Sealark Expedition collected many specimens, chiefly in Mahé, at Montagne Alphonse, 1800 ft., the 4 Dec. 1905; Mt. Harrison, 2000 ft., Trois frères, 1500 ft., 17 Nov. 1905; mountain forest, Cascade, 2000 ft., 3 Dec. 1905: also in Silhouette 1 specimen and in Praslin 2 specimens. In the museum at Hamburg are many specimens, taken by Dr A. Brauer, 2 to 8 April, 1901.

33. *Setaphora suarezi.*

Philoscia suarezi Dollfus, Mém. Soc. Zool. Fr. v. 8, p. 185, text-fig. 7, 1895.

Setaphora suarezi Budde-Lund (5), p. 291, Taf. 16, fig. 6—14, (7), p. 15.

Several specimens from Coetivy and Farquhar. This species is common in East Africa, in the Comoro Islands and in North Madagascar.

34. *Setaphora pilosa*, n. sp. (Plate **22**, figs. 19—23).

Superficies sparse, in segmentis caudæ densius, setis minutissimis obtecta.

Oculi magni; ocelli numero circiter 17—18.

Antennæ longæ, duas partes corporis longitudine superantes; flagellum articulo 5 scapi paululo longius, articulus 1 longissimus, articuli 2 et 3 æquilongi, articulus 3 seta apicali longa.

Frons ante non marginata; lobi laterales parvi, adpressi, rotundate ovales. Epistoma supra planum, infra linea elevata transversa, subrecta.

Trunci segmentum 1 margine posteriore valde curvato, segmenta 2, 3, 4, margine posteriore leviter curvato, subrecto, segmenta 5, 6 leviter segmentum 7 fortiter margine postico medio incurvo; anguli postici segmentorum 1—5 obtusi, rotundati, anguli postici segmentorum 6—7 subrecti.

Caudæ segmenta 3, 4, 5, epimeris minimis, adpressis, acutissimis.

Telsum breve triangulum, lateribus leviter incurvis, apice late rotundato.

Color e fusco violaceus, maculis striis parvis punctis albescentibus crebratus, in epimeris segmentorum 2, 3, 4, 5, trunci macula oblonga albida utrinque posita, in epimeris ceterorum segmentorum macula evanida; anguli postici trunci segmentorum maxime posteriorum perlucente albidi; antennæ fuscæ, flagello flavo.

Long. 5 mm. Lat. 2 mm.

Distribution. Chagos Archipelago: many specimens from Salomon; 3 specimens from Diego Garcia; 6 specimens from Egmont.

Genus Aphiloscia (Budde-Lund (5), p. 291), 1908.

35. *Aphiloscia annulicornis.*

Philoscia annulicornis Budde-Lund (1), p. 211, 1885.

„ „ Dollf., Mém. Soc. Zool. Fr., v. 8, p. 184, text-fig. 6, 1895.

Aphiloscia „ Budde-Lund (5), p. 291; Taf. 16, fig. 15—31, 1908.

Seychelles Archipelago: Mahé, mountain forest, Cascade, one large specimen, 9·5 mm. long, 4·5 mm. broad. Farquhar, 30 Sept. 1905, several small specimens.

This species seems to be common in Madagascar and in the Comoro Islands; it is also found in Mauritius and Réunion.

Subfamilia **Olibrininae.**

Antennæ longissimæ, flagello longo, multiarticulato (10—15).

Maxillæ prioris paris lamina exterior longa, angusta, margine posteriore nudo, apice dentibus c. duodecim, omnibus integris, simul appendice longa, mobili; lamina interior apice dense crinito penicillis duobus minus manifesto discretis instructa.

Maxillæ alterius paris lamina angusta indivisa, apice integro, dense crinito.

Maxillipedum articulus labialis angustus, margine exteriore et interiore ad apicem pilis longis instructo; palpus magnus, latus, 2-articulatus, articulus 1 brevis spinis solitis duabus minutis instructus, articulus 2 permagnus, latus, margine interiore ad apicem undulate producto cum margine exteriore crinibus longis instructo; mala palpo multo brevior, ad apicem angustata.

Exopoditum pleopodum trachea destitutum.

Olibrinus nov. gen.

Having rather hurriedly to give a report of the collection of terrestrial Isopods from the Malayan Peninsula gathered by the Skeat Expedition, I had no opportunity to make a profound examination of the few specimens of the below-mentioned species; on account of its habitus and the multi-articulated flagellum of the antennæ I placed the species in the genus *Trichoniscus*. I now have had a somewhat larger number of specimens for examination, and, as it seems, of three different though very nearly allied species. *Olibrinus* has to be placed in the family *Oniscoidæ*, even though not only by the antennæ but also by the structure of the trophi it makes a transition to the family *Ligiidæ*. I have, however, considered it necessary to distinguish it as a subfamily.

36. *Olibrinus antennatus* (Plate **22**, figs. 24—26).

Trichoniscus antennatus Budde-Lund in Proc. Zool. Soc. London, 1902, p. 379.

Superficies lævis, nitida.

Oculi minores; ocelli 8—10.

Antennæ perlongæ, gracillimæ, corpus longitudine paulum superantes; scapi articulus 1 brevis; articuli 2 et 3 breviores, subæquales; articulus 4 fere duplo longior quam

articulus 3; articulus 5 paulo, fere quarta parte longior quam articuli 3 et 4 simul sumpti; flagellum paulo longius quam scapi articulus 5, 15-articulatum, articulo primo ceteris longiore.

Trunci segmenta quattuor priora margine posteriore subrecto vel leviter curvato, angulis posticis rotundate obtusis; segmenta 5 et 6 margine posteriore in medio leviter incurvo; segmentum 7 margine posteriore in medio fortiter incurvo; anguli postici segmenti 5 subrecti, segmentorum 6 et 7 acutiores. Segmentum 2 pronoto quarta parte dorsi vix longiore, utrinque intra angulos laterales desinente.

Caudæ segmenta 1—5 post sensim majora, epimeris minimis, adpressis, inflexis.

Telsum breve, medio leviter rotundate triangulo producto.

Uropodes producti, longi, tertiam corporis partem longitudine paulum superantes; scapus teres, oblongus, plus duplo longior quam latior; exopoditum elongate conoidale, multo, fere duplo, longius quam scapus, apice setis brevibus instructum; endopoditum processui brevi scapi insertum, quam scapus paulo brevius, apice tamen scapum superante.

Subunicolor e fusco violaceus.

Long. 5—6 mm. Lat. 2—2·3 mm.

Distribution. Malay Peninsula.

37. *Olibrinus pigmentatus*, n. sp.

Oculi minores, ocelli numero 11.

Antennæ perlongæ, corpore vix breviores. Flagellum articulo 5 scapi longius, 13-articulatum; articulus primus ceteris paulo longior.

Frons ante marginata, linea marginalis utrinque decurrens, lobos minores amplectens. Fossæ antennarum permagnæ, maximam partem inferiorem epistomatis occupantes. Antennulæ sese fere attingentes, spatium inter fossas antennarum occupantes. Clypeus magnus leviter fornicatus; labrum magnum porrectum. Os porrectum.

Trunci segmenta 1, 2, 3 margine posteriore leviter curvato, utrinque vix incurvo; segmentum 4 margine posteriore subrecto; segmenta 5, 6, 7 margine posteriore in medio post sensim magis incurvo; anguli posteriores segmentorum 1, 2, 3, 4 rotundate obtusi, 5 subrecti, 6, 7 acuti.

Caudæ segmenta 5 priora subæque longa, epimeris omnibus minutis, adpressis. Segmenta 1, 2 brevia, 3, 4, 5 longiora, epimeris perparvis acutis.

Pleopodes trachea nulla muniti.

Telsum brevissimum, medio anguste rotundate paulum producto.

Uropodes longi, producti, tertiam corporis partem longitudine subæquantes; scapus angustus, processu endopoditi brevi; endopoditum gracile scapum paulum superans; exopoditum longum dimidio longius quam scapus, gracile, teres.

Color albidus, punctis nigris minutissimis pigmentatus.

Long. 6 mm. Lat. 2·2 mm.

Distribution. Chagos Archipelago: Salomon, one specimen; Coin, Peros, four specimens.

38. *Olibrinus olivaceus*, n. sp.

Oculi minores, ocelli majores, c. 10.

Antennæ longæ, gracillimæ, paulo ($\frac{7}{8}$) breviores quam corpus; articulus 1 scapi brevissimus; articuli 2 et 3 breves subæquales; articulus 4 plus duplo longior quam articulus 3; articulus 5 vix longior quam articuli 3 et 4 simul sumpti; flagellum fere quarta parte longius quam articulus 5 scapi, 10-articulatum, articulo primo longiore quam ceteris.

Mandibula dextra penicillo altero fixo, altero libero.

Frons ante marginata; linea marginalis medio subrecto, utrinque in lobos laterales mediocres obtusos, deflexos producta.

Trunci segmenta 1, 2, 3 margine posteriore leviter curvato vel subrecto; segmentum 4 margine posteriore recto; segmenta 5, 6 margine posteriore in medio incurvo; segmentum 7 margine posteriore in medio fortiter incurvo; anguli posteriores segmentorum 1, 2, 3, 4, late rotundate obtusi, segmenti 5 rotundati subrecti, segmentorum 6, 7 acuti. Pronotum segmenti 2 quartæ parti dorsi longitudine æquale.

Caudæ segmenta 3, 4, 5 post sensim longiora, epimeris parvis, adpressis, acutis, retroductis.

Telsum breve, medio semicirculatim producto.

Subunicolor e griseo olivaceus.

Long. 8 mm. Lat. 2·5 mm.

Distribution. A few specimens were taken at Djibouti by Prof. H. Coutière in the year 1897 (Mus. Paris).

Familia **Tylidæ** (*Tylides*, Budde-Lund (1), p. 272), 1885.

39. *Tylos minor.*

Tylos minor Dollf. (1), p. 189, text-fig. 4 *a—e*, 1893.

Seychelles, sec. Dollf.: "Mahé, digue, plage, sous Algues" (Ch. Alluaud).

Familia **Ligiidæ** (*Ligiæ*, Budde-Lund (1), p. 242), 1885.

40. *Ligia exotica.*

Ligia exotica Roux (Crustacés de la Méditerranée et de son littoral...Marseille 1828, Livr. 3, Tb. 13, fig. 9).

„ „ Budde-Lund (1), p. 266.

Seychelles, sec. Dollf.: "Plage de l'île Ronde, rochers près de la mer" (Ch. Alluaud).

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—— (2) A Revision of Crustacea Isopoda Terrestria: I. Eubelum, Kjöbenhavn, 1899 (5 Tabb.); II. Spherilloninæ; III. Armadillo, Kjöbenhavn, 1904 (5 Tabb.).

—— (3) Die Land-Isopoden der Deutschen Südpolar-Expedition, 1901—1903, IX. Zoologie i. Berlin, 1906. (Mit 2 Taf.)

—— (4) Terrestrial Isopoda from Egypt, in: Results of the Swedish Zoological Expedition to Egypt and the White Nile, 1901, under the direction of L. A. Jägerskiöld. Nr. 26, A. Upsala, 1908. (With 1 Tab.)

—— (5) Isopoda von Madagascar und Ostafrika, in: Voeltzkow, Reise in Ostafrika in den Jahren 1903—1904, ii. Stuttgart, 1908. (Mit 7 Taf.)

—— (6) Land-Isopoden, in: L. Schultze, Forschungsreise im westlichen und zentralen Südafrika, ausgeführt in den Jahren 1903—1905 (Denkschr. d. medi.-naturwiss. Ges. xiv. Jena 1909). (Mit 3 Taf.)

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DOLLFUS, AD. (1) Crustacés Isopodes terrestres, in: Voyage de M. Charles Alluaud aux Iles Séchelles. (Bull. d. l. Soc. Zool. de France, t. xviii. p. 186. Paris, 1893.) (With text figures.)

—— (2) Isopodes terrestres recueillis à Diégo-Suarez, à Tamatave et à la Réunion, in: Mission de M. Ch. Alluaud dans le territoire de Diégo-Suarez (Madagascar-Nord), Avril-Août, 1893. (Mém. d. l. Soc. Zool. de France, t. viii. p. 180. Paris, 1895.) (With text figures.)

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EXPLANATION OF PLATES 20—22.

Plate 20.

Fig. 1. *Pseudophiloscia lateralis*, n. sp. Distal portion of the right mandible, from below. × 135.
Fig. 2. „ „ „ Distal portion of the left mandible, from below. × 135.
Fig. 3. „ „ „ Distal portion of the exopodite of right 1st maxilla. × 135.
Fig. 4. „ „ „ Distal portion of the endopodite of the same maxilla. × 135.
Fig. 5. „ „ „ Distal portion of the left pes maxillaris. × 75.
Fig. 6. „ „ „ Right uropod. × 16.
Fig. 7. „ *angustissima*, n. sp. Distal portion of the right mandible, from below. × 135.
Fig. 8. „ „ „ Distal portion of the left mandible, from above. × 135.
Fig. 9. „ „ „ Distal portion of the exopodite of the left 1st maxilla. × 250.
Fig. 10. „ „ „ Distal portion of the left pes maxillaris. × 150.
Fig. 11. „ *brevicornis*, n. sp. Distal portion of the right mandible, from below. × 150.
Fig. 12. „ „ „ Distal portion of the left mandible, from below. × 150.
Fig. 13. „ „ „ Distal portion of the exopodite of the left 1st maxilla. × 135.
Fig. 14. „ „ „ Distal portion of the right pes maxillaris. × 150.
Fig. 15. „ „ „ Left uropod, from the outer side. × 50.
Fig. 16. „ „ „ Left uropod, from below. × 50.
Fig. 17. *Mahehia maculata*, n. sp. The head, from above. × 10.
Fig. 18. „ „ „ Right part of the first segment, from above. × 4.
Fig. 19. „ „ „ Right part of the second segment, from above. × 4.
Fig. 20. „ „ „ The right antenna. × 10.
Fig. 21. „ „ „ Distal portion of the right mandible, from below. × 35.
Fig. 22. „ „ „ The apex of the seta of the right mandible. × 135.
Fig. 23. „ „ „ Distal portion of the exopodite of the left 1st maxilla. × 60.
Fig. 24. „ „ „ Distal portion of the right pes maxillaris. × 60.
Fig. 25. „ „ „ Right uropod of a female. × 20.
Fig. 26. „ *laticauda*, n. sp. Dorsal aspect. × 4.

Plate 21.

Fig. 1. *Mahehia laticauda*, n. sp. Distal portion of the left mandible, from below. × 60.
Fig. 2. „ „ „ Distal portion of the left mandible, from above. × 75.
Fig. 3. „ „ „ 1st appendix of the endopodite (lacinia mobilis) of the left mandible, from above. × 75.
Fig. 4. „ „ „ Distal portion of the left pes maxillaris. × 15.
Fig. 5. „ „ „ 7th leg of the male. × 12.
Fig. 6. „ „ „ The apex of the same leg. × 135.
Fig. 7. „ *bicornis*, n. sp. The head, from above. × 12.
Fig. 8. „ „ „ Distal portion of the right mandible, from below. × 75.
Fig. 9. „ „ „ Distal portion of the exopodite of the left 1st maxilla. × 75.
Fig. 10. „ „ „ Posterior part of the cauda. × 4.
Fig. 11. „ „ „ Left uropod of the male. × 20.

Fig. 12. *Bethalus simplex* Dollfus. Distal portion of the right mandible, from above. × 100.
Fig. 13. „ „ „ Distal portion of the left mandible, from below. × 100.
Fig. 14. „ „ „ Distal portion of the exopodite of the right 1st maxilla. × 200.
Fig. 15. „ „ „ Distal portion of the left pes maxillaris. × 100.
Fig. 16. *Trichorhina minutissima*, n. sp. The head, from above. × 25.
Fig. 17. „ „ „ Distal portion of the right mandible, from below. × 250.
Fig. 18. „ „ „ Distal portion of the left mandible, from below. × 250.
Fig. 19. „ „ „ Distal portion of the exopodite of the left 1st maxilla. × 450.
Fig. 20. „ „ „ The apex of the endopodite of the right 1st maxilla. × 450.
Fig. 21. „ „ „ Distal portion of the left pes maxillaris. × 135.
Fig. 22. „ „ „ The apex of right 1st leg. × 500.
Fig. 23. „ „ „ Posterior part of the cauda, from above. × 30.
Fig. 24. „ „ „ Right uropod. × 75.
Fig. 25. „ *micros*, n. sp. Distal portion of the exopodite of left 1st maxilla. × 450.
Fig. 26. „ „ „ Distal portion of the endopodite of the same maxilla. × 350.
Fig. 27. „ „ „ Distal portion of the right pes maxillaris. × 250.

Plate 22.

Fig. 1. *Trichorhina tomentosa* Budde-Lund. Distal portion of the right mandible, from below. × 250.
Fig. 2. „ „ „ Distal portion of the left mandible, from above. × 300.
Fig. 3. „ „ „ Distal portion of the exopodite of the left 1st maxilla. × 350.
Fig. 4. „ „ „ Distal portion of the left pes maxillaris. × 250.
Fig. 5. „ „ „ Posterior part of the tail. × 25.
Fig. 6. „ *quisquiliarum* Budde-Lund. Posterior part of the tail. × 50.
Fig. 7. *Alloniscus pigmentatus* Budde-Lund. Distal portion of the exopodite of right 1st maxilla. × 135.
Fig. 8. *Setaphora ovata*, n. sp. Distal portion of the right mandible, from above. × 135.
Fig. 9. „ „ „ Distal portion of the left mandible, from above. × 135.
Fig. 10. „ „ „ Distal portion of the exopodite of the left 1st maxilla. × 250.
Fig. 11. „ „ „ Distal portion of the endopodite of the same. × 170.
Fig. 12. „ „ „ Distal portion of the left pes maxillaris. × 135.
Fig. 13. „ „ „ Right uropod. × 25.
Fig. 14. „ *pallidemaculata*, n. sp. Distal portion of the left mandible, from below. × 75.
Fig. 15. „ „ „ „ Distal portion of the exopodite of the left 1st maxilla. × 135.
Fig. 16. „ „ „ „ Distal portion of the endopodite of the left 1st maxilla. × 135.
Fig. 17. „ „ „ „ Distal portion of the left pes maxillaris. × 135.
Fig. 18. „ „ „ „ Right uropod. × 15.
Fig. 19. „ *pilosa*, n. sp. Distal portion of the exopodite of the right 1st maxilla. × 250.
Fig. 20. „ „ „ Distal portion of the endopodite of the same. × 250.
Fig. 21. „ „ „ Distal portion of the left pes maxillaris. × 150.
Fig. 22. „ „ „ Left 1st leg of male. × 70.
Fig. 23. „ „ „ Right uropod. × 25.
Fig. 24. *Olibrinus antennatus* Budde-Lund. Antenna. × 15.
Fig. 25. „ „ „ Distal portion of the exopodite of the left 1st maxilla. × 250.
Fig. 26. „ „ „ Left uropod. × 30.

Budde-Lund. del

Budde-Lund, del

E. Wilson, Cambridge

TERRESTRIAL ISOPODA

Budde-Lund, del.

No. XXIII.—PELAGIC ACTINIARIAN LARVÆ.

By Edith E. Bamford, Newnham College, Cambridge.

(Plates 23 and 24.)

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 2nd November, 1911.

The collection of Actinian larvæ from the Indian Ocean, though small, proves to be of considerable interest. It consists of thirteen different types; of these four belong to the group Zoanthidea, three to the Cerianthidea, and the remaining six probably to the Actiniaria. The chief interest of the collection lies in the four Zoanthidean larvæ; they are all new species of the genus *Zoanthina* (v. Beneden *), and they form a considerable addition to the few species so far recorded. There are only single specimens of all the types in the different groups with the exception of one *Zoanthina*, which has two representatives.

The larvæ were brought home in formalin in seawater. Subsequently they were put into a saturated solution of corrosive sublimate for one hour and stained with borax carmine. Serial sections were cut at right angles to the oro-aboral axis and stained with picronigrosin. The second larva of the Zoanthidean with two representatives was cut longitudinally.

Zoanthidea.

Four different forms of larvæ are assigned to this group, but they all belong to the same type as Semper's first larva, to which v. Beneden gave the generic name, *Zoanthina*. Carlgren slightly modified and extended the diagnosis of the genus: "Pelagische Anthozoenlarve von eiförmiger Gestalt mit einer ringförmigen, transversal verlaufenden, geisseltragenden, tiefen Furche, die den Körper in zwei Partien, einen oralen kleineren, die die Mundscheibe und das Schlundrohr enthält, und einer aboralen grösseren, mehr lang gestreckten, teilt†."

The four forms belong to undescribed species. Larva IV. is rather discoidal than egg-shaped. All have twelve mesenteries, of which six are incomplete, among them being the dorsal directives. Three of the species have the microtype arrangement of mesenteries, but larva II. has the microtype arrangement on one side and the macrotype on the other. Of this arrangement Duerden‡ recorded examples as a variation in adults of *Palythoa mamillosa* (Ell. & Sol.), *Palythoa caribæa* (Duch. & Mich.) and *Gemmaria variabilis* (Duerden), both genera belonging to the Zoanthidea. The endodermal swellings on

* Plankton Expedition, Les Anthozoaires, 1898, p. 196.

† Nordisches Plankton, Zoantharien Larvæ, xi. 1906, p. 89.

‡ Trans. Roy. Dub. Soc. 2, vi. 1898, Jamaica Actiniæ, p. 331.

the mesenteries of larva III. are of interest, as is also the peculiar development of the filaments and endodermal outgrowths in larva IV.

1. *Larva I. Zoanthina diamanta*, n. sp. (Pl. **23**, figs. 1, 2.)

The specimen is ovoidal, 3 mm. long by 2·25 mm. in diameter; it is a light brown colour with darker brown patches. The circular groove is deep and carries long flagellæ; the oral part is smaller than the aboral, the base of which tapers somewhat. There are no longitudinal depressions on the surface and no tentacles.

The buccal orifice is circular but the stomodæal cavity is fissure-like. The stomodæum reaches almost to the circular groove, and is conspicuously ridged over the attachments of the mesenteries. All the mesenteries extend from one pole to the other, passing through the narrow pedicle between the oral and aboral halves. The endoderm forms a short central pillar into the aboral end of the cœlenteron, which is also largely obliterated by thickenings of the parietal endoderm. The mesenterial filaments are direct continuations of the stomodæal ridges and extend almost to the aboral end.

The ectoderm is a well-marked epithelium containing, (1) numerous, small, radially directed nematocysts, each with a close spiral filament and, (2) deeply stained, ovoidal, granular and mucous gland cells, the whole densely packed together on its surface; beneath lie numerous spherical nuclei with a few larger, possibly immature nematocysts, and there is a thin nervous layer over the structureless lamella. The ectoderm both of the stomodæum and of the mesenterial filaments is ciliated, with numerous granular gland cells and a few mucous cells; there are no nematocysts.

The structureless lamella is relatively thick and contains a few isolated cells. The muscles form a single layer over well developed banners in the mesenteries. Parietobasilar muscles are also present.

The endoderm is comparatively dense with spherical nuclei near its free edge; large patches of a yellow, slightly granular substance and scattered yellow granules are found in it, particularly over the mesenteries.

Loc. Lagoon, Peros Banhos, Chagos Archipelago, 9 fathoms.

2. *Larva II. Zoanthina variabilis*, n. sp. (Pl. **23**, figs. 3, 4.)

The two specimens are similar in appearance and size to larva I., but there are indications of ridges on the surface and the aboral end is less tapering.

The stomodæum extends to the circular groove and is conspicuously ridged, the ridges continuing on to the mesenterial filaments, which are convoluted towards the aboral end. The mesenteries extend to the aboral end, and are large and conspicuous in the pedicle. They are broad and thick, and almost fill up the cœlenteron; those which are incomplete are sharply bent backwards, on the sides on which their muscles lie, towards the polyp wall. At the aboral end is a central column of endoderm, to which radiating endodermal outgrowths from the base and sides are fused for part of its length.

The histology of the tissues is similar to that of larva I., but the ectoderm and the endoderm are much thicker; the deeply situated, possibly immature, nematocysts in the external ectoderm are very numerous. The endoderm is crowded with small round yellow

globules, like yolk globules. The muscular fibres form a single layer and parieto-basilar muscles are present.

Loc. Off Salomon Atoll, Chagos Archipelago, surface; two specimens.

One specimen has been cut into transverse and the other into longitudinal sections. The former has the mesenteries in the stomodæal region arranged on one side in the microtype manner and on the other in the macrotype.

The arrangement in the other larvæ of the genus is that the dorsal-directives are incomplete mesenteries, viz. do not meet the stomodæum and have no filaments, while the ventral directives, being complete, fuse with the stomodæum and have filaments; laterally, complete and incomplete mesenteries alternate from the dorsal to the ventral side, the whole arrangement being the microtype. In the larva now referred to, on the side with the macrotype arrangement, the mesentery next but one to the dorsal directive is complete in that it extends to the stomodæum throughout its length, but it is not provided with a filament on its free edge. In the cases referred to as described by Duerden it is the usually incomplete mesentery of the second pair from the dorsal directives.

3. *Larva III. Zoanthina sladeni*, n. sp. (Pl. **23**, figs. 5, 6.)

The specimen is 1·5 mm. long by 1·125 mm. in diameter; its colour is white. The pedicle is comparatively long and the circular groove deep. The oral part is marked by twelve longitudinal depressions, but the aboral part is not grooved; no tentacles are present.

The stomodæum extends to the circular groove and is a fissure-like opening at the base of a rather ovoidal buccal orifice; no ridges are present. The mesenteries reach from the oral to the aboral pole, and towards the latter both extend almost equally into the cœlenteron; in the pedicle the incomplete mesenteries are minute. There is no aboral pore, but the centre of the aboral surface is depressed externally and this gives rise to an upgrowth within the cœlenteron, in some sections simulating the pillar found in larvæ I. and II.

A peculiar feature of the mesenteries is the development of endodermal outgrowths as in fig. 6. They are circular in section and consist of much vacuolated endoderm with a central axis formed by the structureless lamella; neither gland cells nor nematocysts occur in them. On examining sections from the oral to the aboral end, these outgrowths are seen near the base of the stomodæum, and there they are fused together. Near the base of the circular groove 6 are distinct, 5 in a circle with 1 in the centre. Towards the aboral end the complete mesenteries are bent sharply back from the centre of the cœlenteron on the side opposite the muscles. At these bends the structureless lamella and the endoderm of the outgrowths are fused up with the corresponding structures of the mesenteries, more aborally appearing to be the direct radial continuations of the mesenteries on which the filaments look like appendages (fig. 6). Nearer the base the filaments stop, and the mesenteries left are in half their breadth formed of the above outgrowths*. Similar endodermal swellings are found on the free edges of the incomplete mesenteries.

* It is useless to speculate on the function or the homologies of the outgrowths here described, as there is only one larva and the early stages of its development are quite unknown.

The ectoderm is a broad layer with long, granular gland cells passing almost to the structureless lamella, regular nematocysts with close spiral and also a few, small, ovoidal nematocysts with loose spiral. The mesenterial filaments are ciliated with granular gland cells and ovoidal nematocysts; the stomodæal ectoderm is similar. The endoderm of the column, stomodæum and mesenteries is crowded with zooxanthellæ, and contains a number of ovoidal nematocysts. Throughout the endoderm are patches of a slightly granular, perhaps yolky substance.

Loc. Off Salomon Atoll, Chagos Archipelago, surface.

4. *Larva IV. Zoanthina gardineri*, n. sp. (Pl. **23**, figs. 7—12.)

The specimen is somewhat discoidal, 1·4 mm. long by 2·5 mm. in diameter; the colour is yellow-brown. The aboral part forms almost a shallow saucer into which the base of the oral part accurately fits; the circular groove is shallower than in the previous larvæ. Twelve longitudinal depressions on the surface, corresponding to the attachments of the mesenteries, are found on both parts and to some degree on the oral and aboral surfaces (fig. 7). There is a still deeper depression on the aboral surface than in larva III., this forming an upgrowth within the cœlenteron.

The stomodæum nearly reaches the circular groove and is wider than in the previous larvæ, almost quadrilateral; no ridges are present. The mesenteries reach from pole to pole, but the incomplete ones are very small in the pedicle, where the complete mesenteries almost fill up the cœlenteron; aborally they are of nearly the same radial width.

The ventral directive mesenteries show peculiarities which are present to some degree in the two lateral pairs of complete mesenteries. On examining serial sections the following structures are found:

(*a*) Towards the base of the stomodæum, near the stomodæal wall, a piece of detached endodermal tissue is seen in each space between the ventral directives and the nearest pair of lateral complete mesenteries.

(*b*) These unite with the two complete mesenteries on either side of each space and also with the endoderm of the stomodæal wall (fig. 8).

(*c*) On the free edge of each of these webs of tissue an epithelium appears, which lower is found to be due to the growth upwards and outwards over them of the free lower edges of the stomodæum; structureless lamella is next seen below this epithelium.

(*d*) In each space the web continues for some distance attached to the mesenteries on either side. Then their attachments to the lateral mesenteries cease and they appear as outgrowths from the directive mesenteries (figs. 9, 10).

(*e*) The stomodæum terminates and the ventral directives are free with the outgrowths, which are now clearly those of the mesenterial filaments, attached to one side of each.

(*f*) On the opposite side of each of the directives an enormous thickening of endoderm appears, leaving fissures below as in fig. 11. These later become filled up, but the endoderm of these sides of the mesenteries is always very thick.

Similar structures are found also in the other spaces between the complete mesenteries,

but their relationship is less clear (figs. 8—11). The whole would appear to be a stage in the growth downwards of the stomodæal ectoderm to form the mesenterial filaments. No trace of such structures are found in connection with the incomplete mesenteries.

The ectoderm resembles that of the last larva (III.) with both types of nematocysts; mucous cells are conspicuous. The stomodæal ectoderm and the mesenteries are likewise similar. The muscle banners are especially conspicuous. The endoderm is also similar, ovoidal nematocysts being particularly abundant on the mesenteries near the stomodæum. It exhibits a quantity of granular, greenish-yellow substance and patches of large bright yellow granules.

Loc. To the South of Saya de Malha Bank, surface.

Cerianthidea.

Three larvæ belong to this division; one is a new species of *Dactylactis*, v. Beneden*, and the others approximate most closely to *Ovactis*, v. Beneden †, but are new. All, as is usual in the division, show the right side preceding the left in development, and larvæ II. and III. are in a stage when there is only present the right mesentery of the couple in formation. The orientation is the same as that given by v. Beneden ; the terms right (*r*) and left (*l*) are used for the sides to the right and left of the directives when viewed from the position of the chamber of multiplication.

5. *Larva I. Dactylactis cerfensis*, n. sp. (Pl. **24**, fig. 13.)

The larva is translucent and measures 3 mm. from the aboral end to the end of the longest tentacle by 2 mm. in greatest diameter. The peristome is introflected and without lips; no aboral pore is present. Eleven marginal and ten labial tentacles are developed; the former approximate to each other at the base and there is no circular groove separating them from the column. There are 12 mesenteries, 5 on each side of the 2 directives, and 12 chambers, 1 of direction, 1 of multiplication and 5 on each side. A marginal tentacle is found above each chamber except that of multiplication; the labial tentacles lie against the marginals, but there is no tentacle above chamber 5 *l*.

Towards the oral end mesenteries 5 *r* and 5 *l* do not reach the stomodæum, but in lower sections both reach it, though 5 *l* only through 2 sections; both of these mesenteries stop short considerably above the aboral end; 5 *l* has no filament, but owing to the loss of certain sections no statement can be made as to 5 *r*. The directives are the shortest of the remaining mesenteries and have no filaments. The latter are found on all the rest and are markedly convoluted on 1, 2 and 4. No acontia are present. There is a deep sulcus with flagellated cells differentiated for a considerable distance, but the presence of a hyposulcus and hemisulci is doubtful.

The marginal tentacles are quadrilateral in section though slightly flattened. The ectodermic muscles are most highly developed on their adaxial sides, but near the column they are well developed on their abaxial sides also. Their nematocysts are long and narrow with a close spiral filament. There is no glandular zone and the ectoderm of the column is without glands. The latter has a few tentacular nematocysts with others larger

* Plankton Expedition, Les Anthozoaires, 1898, p. 103. † *loc. cit.*, p. 84.

and obliquely placed. The ectodermic longitudinal muscles are well developed, but there are no ridges of the structureless lamella for their support.

The mesenterial filaments have numerous granular glands and some large deeply stained nematocysts with a light central axis. The stomodæum has well developed ridges, and its ectoderm has both the tentacular and mesenterial nematocysts as well as granular gland cells.

The endoderm is much vacuolated. It forms a definite layer on the walls of the stomodæum and of the column, but most of this region is filled in with delicate tissue, no definite boundary limiting the mesenteries. Near the aboral end the mesenteries are well-defined and leaf-like in section.

Loc. Providence reef, off Cerf Island, surface.

Genus Ovactis, v. Beneden.

V. Beneden defined the genus as follows* : "Larves ovoïdes ou pyriformes, qui l'on prendrait à première vue pour des œufs. Elles portent à la périphérie du disque buccal un cercle de mamelons tentaculaires marginaux, si peu saillants, qu'à peine ils s'aperçoivent à l'œil nu, quoique les larves mesurent plusieurs millimètres suivant leur grand axe. L'apparition du tentacule médian est très-tardive ; elle est toujours postérieure à la formation des quatre premier couples de tentacules marginaux. Il n'en existe encore aucune trace chez des larves pourvues de douze tentacules chez *O. brasiliensis*. On peut en dire autant des tentacules labiaux. Je n'ai trouvé aucune indication de ces organes chez aucune des espèces rapportées à ce genre. Le cône buccal est peu saillant. Il existe des fibrilles musculaires longitudinales sur les deux faces des sarcoseptes latéraux. Les cloisons S^3 seules portent des aconties. Les cloisons directrices atteignent à peu près le pôle aboral."

The two larvæ in the collection are neither egg-shaped nor pyriform, but sub-spherical, flattened on both their oral and aboral surfaces. No longitudinal muscular fibres are found on the lateral mesenteries and there are no acontia. The time of the development of the median tentacle is not known, but in the second larva (larva III.), where there are tentacular processes, the median process is the smallest so that it is evidently late in developing.

6. *Larva II. Ovactis superficialis*, n. sp. (Pl. **24**, fig. 14.)

The larva is colourless, translucent and almost spherical, flattened orally and considerably depressed aborally ; its length is 2 mm. and its maximum diameter 2·8 mm. On each side of the median plane the oral surface is raised forming the lips of the buccal cone. There are no tentacles nor rudiments of tentacles.

In transverse section the stomodæum is small, quadrilateral above, but nearer the enterostome broadly elliptical. A sulcar groove is differentiated, there are stomodæal ridges near the enterostome, and both hyposulcus and hemisulci are present but short. There are 17 mesenteries which are all complete, 8 on the right and 7 on the left of the 2 directives. Mesentery 8 is the shortest, then mesentery 7 *l* and next mesentery 7 *r*. With the exception of mesentery 6 *l*, which nearly reaches the base, all the mesenteries extend to the aboral end. The mesenteries in transverse section are somewhat leaf-like in

* *loc. cit.* p. 84.

form; no muscles can be distinguished. There are mesenterial filaments on all except 8 and 7 *l*. Convolutions are found on mesenteries 1, 2, 4, and 6, and also mesenterelles; on mesenteries 4 *r* and 6 *l* they are slight. There are no acontia.

The ectoderm of the column has granular glands and a few spiral nematocysts; that of the stomodæum is similar. The tissue of the mesenterial filaments has numerous granular glands and a few spiral nematocysts occur in the filaments. The structureless lamella is produced into long narrow processes simple or branched which bear the longitudinal ectodermal muscles. The endoderm is a thin but compact layer on the column and stomodæum; on the mesenteries it is much vacuolated.

Loc. Off Salomon Atoll, Chagos Archipelago, surface.

7. *Larva III. Ovactis indiana*, n. sp. (Pl. **24**, fig. 15.)

The larva is like the last, but it is shrunken in places; its length is 2·5 mm. and its maximum diameter 2·75 mm. The peristome is introflected and there is no buccal cone; the edge of the peristome is seen in the sections to be produced into protuberances, the beginnings of tentacles, above some of the mesenterial chambers.

The stomodæum has a broadly elliptical cavity; it possesses no ridges and the epithelium of the sulcar groove is not differentiated; a hyposulcus and hemisulci are present.

The ectoderm of the stomodæum is in direct continuity with the mesenterial filaments. There are 17 mesenteries near the oral end, 8 on one side and 7 on the other side of the two directives. Mesentery 8 is the shortest, then mesentery 7 *l*, and these do not extend below the stomodæum; the next shortest is mesentery 7 *r*. Near the oral end there are 17 inter-mesenterial chambers, but below the stomodæum only 14. Mesentery 8 and mesentery 7 *l* have no mesenterial filaments; the rest have filaments, except mesentery 7 *r*, which has a terminal swelling not continuous with the ectoderm of the stomodæum but provided with spiral nematocysts. The filaments of the even numbered mesenteries and also 1 *r* and *l* are convoluted. In section the mesenteries are leaf-like and those which have convolutions have also mesenterelles. Acontia are absent.

In the ectoderm of the column are numerous glands, some large, stained blue, containing large granules, others small, stained red, containing small granules. Nematocysts of the common form, long and narrow with a close spiral, are numerous, and at the oral end and on the peristome are a few exceptionally large nematocysts, deeply stained, with straight axes. On each of the tentacular prominences, or on the column just below each, is a group of mucous gland cells. Greenish spherical bodies, which in some cases have a rough external surface, are fairly numerous near the base of the ectoderm; in transverse section they show two or three lightly coloured spots. The mesenterial filaments have closely packed granular glands and a few spiral nematocysts; the stomodæal ectoderm is similar, with additional long, narrow and deeply stained nematocysts. The ectodermal muscles are carried on rounded projections of the structureless lamella. There is as yet no trace of muscles, but banners have commenced to form.

Loc. Lat. 4° 16′ S., long. 71° 53′ E., North of Chagos Archipelago, 25 fathoms.

Hexactinian Larvæ.

The Hexactinian* larvæ described by v. Beneden formed two groups: (1) larvæ with 8 mesenteries; (2) larvæ with 24 mesenteries; these larvæ he did not name. In 1906 Carlgren† divided his larvæ into four groups according to their mode of life, the arrangement of the tentacles, and the time when the latter begin to develop.

"A. Larven mit einem pneumatischen Apparat, mit vielen Tentakeln und vielen Mesenterienpaaren: die Minyaden. (Nicht in nordischen Meeren angetroffen.)

B. Larven, die parasitisch an Medusen leben, und also nur in zweiter Linie ein pelagisches Leben führen. Die Tentakeln werden in dem Achtmesenterien-stadium angelegt. Alle sechs Exocoeltentakeln des Halcampulastadiums sind in dem Stadium mit acht Tentakeln vorhanden.

C. Larven, die während längerer Zeit pelagisch leben und die bis zu einem Stadium mit zwei Mesenteriencyklen keine Tentakeln entwickeln.

D. Larven, die als solche ein kürzeres Leben haben und die in dem Achtmesenterien-stadium Tentakeln ausstülpen. Nur zwei Exocoeltentakeln des Halcampulastadiums sind in dem Stadium mit acht Tentakeln vorhanden."

In the collection there are six different types of larvæ which probably belong to the Hexactiniae, and if so, according to Carlgren's divisions, they should all be placed in group C. Of these six larvæ, two have 8 mesenteries, three have 12, and one has 20, and all are without tentacles.

It is impossible to classify them generically and specifically. All that can be said is that they are probably all different species and that the larvæ with more mesenteries do not represent older stages of the larvæ with fewer mesenteries: apparently they are not the same species as any that have been so far described.

The chief points of interest are the presence of embryos in one of the specimens with only 8 mesenteries and the peculiar relation of the mesenterial filaments.

Larvæ with Eight Mesenteries.

8. *Larva I.* (Pl. **24**, fig. 16.)

The larva is white and subspherical, its aboral end produced into a hollow protuberance; its length is ·5 mm. and diameter ·75 mm. There are eight radiating grooves on the peristome.

Eight complete mesenteries are present, continued to the base but little projecting in that part; with their well-developed muscles they have the Edwardsian arrangement. Filaments are present on all, but on the directives they only extend through a few sections; they are much convoluted on the ventro-lateral mesenteries. Epithelial cells are found on the enterostomal wall within the mesenterial chambers, due to the edge of the enterostome either being slightly turned up or having slightly grown up. The filaments are connected with this epithelium, which also grows up orally on the dorsal

* Plankton Expedition, Les Anthozoaires, 1898, pp. 150 and 183.

† Nordisches Plankton, Zoantharien Larvæ, xi. 1906, p. 80.

sides of the lateral mesenteries, becoming detached at its ends so as to form free filaments within the chambers. Such a free filament has passed through the left dorso-lateral mesentery. Parieto-basilar muscles are developed.

The ectoderm of the column contains granular glands and nematocysts with close spiral threads. That of the aboral part is very thick and has numerous nematocysts with loose irregularly coiled threads, the close spiral kind being absent. The ectoderm of the stomodæum is ciliated with numerous granular glands, the filaments are similar with large and long nematocysts with close spiral threads, and others which stain deeply but not clearly; there are thus three (or four) kinds of nematocysts. The endoderm has no nematocysts; zooxanthellæ are present in its cells and there are numerous vacuoles which appear to have been occupied by them. Between the mesenteries parietal endodermal outgrowths, which are large aborally, project into the cœlenteron.

Loc. South of Saya de Malha Bank, surface.

9. *Larva II.* (Pl. **24**, figs. 17—19.)

The larva is white, cylindrical, tapering slightly aborally with a depression but no pore; it is 1·5 mm. long and 1 mm. broad. The peristome shows eight grooves, which continue down the side of the column. The stomodæum is rather more than a third the length of the column and has a circular lip about its middle projecting into its cavity.

The eight mesenteries are complete with filaments on all and reach to the aboral end, but their muscles are too little developed for their arrangement to be ascertained. The filaments on the pairs of directives though of considerable length are shorter than those on the lateral mesenteries which almost reach the aboral end; on the lateral mesenteries they are much convoluted. There is a distinct upturned fold of the enterostomal wall and the connection of the filaments of the lateral mesenteries with this epithelium falls within the mesenterial chambers.

The ectoderm is only preserved in a few places and its detailed structure is uncertain. That of the stomodæum has granular and mucous gland cells and long narrow nematocysts with a close spiral thread, as well as other deeply stained nematocysts. The endoderm is much vacuolated and the cœlenteron is almost filled with loose endodermal tissue.

Loc. Mauritius, 5 miles west of Black River, 300 fathoms.

Within the endoderm are three embryos (fig. 20) in different stages of development. Four embryos were described by v. Beneden in the larva of *Zoanthina nationalis* (v. Beneden). He suggested that the larva and its embryos were offspring of a viviparous parent, and that the embryos found their way into the larva within the parent and subsequently continued their development. In all parts of the endoderm of the present larva, particularly in that of the mesenteries, unicellular cells are found with large nuclei; these look like reproductive cells. It may also be remarked that with the cœlenteron almost filled with endodermal tissue the entrance of young embryos is unlikely.

Larvæ with Twelve Mesenteries.

10. *Larva I.* (Pl. **24**, fig. 20.)

The larva is opaque-white, much flattened orally and aborally; its length is ·5 mm. and diameter ·75 mm. There are 12 radiating grooves on the peristome. The stomodæum is short and without ridges.

Of the mesenteries 8 are complete and 4 incomplete but their muscles are so little developed that their arrangement is uncertain. Filaments are only produced for any distance on one lateral and one directive mesentery, and on these they have very large nematocysts.

The ectoderm of the column and stomodæum is thick and vacuolated; nematocysts are comparatively few but of two kinds, small with a close spiral thread and large with a loose spiral thread; granular and mucous gland cells occur. The endoderm is compact, with numerous zooxanthellæ; between the mesenteries it is produced into the cœlenteron and more vacuolated.

Loc. South of Saya de Malha Bank, surface.

11. *Larva II.* (Pl. **24**, fig. 21.)

The larva is opaque-white, irregularly cylindrical, narrowing aborally; its length is ·66 mm. and diameter ·5 mm. There are no grooves on the peristome. The stomodæum is very short.

All the mesenteries reach the aboral end, but, as the stomodæum is excentric and as the parts are not clearly defined on the side where the mesenterial chambers are small, it is impossible to see their arrangement. One mesentery has a much greater radial extent than the others and is the only one with a filament. The latter has large spiral nematocysts, and on the free edges of two other mesenteries similar nematocysts are found near their aboral ends.

The ectoderm of the column and stomodæum is similar to that of the last larva, but it is more compact and only the smaller nematocysts are found. The endoderm is likewise similar; zooxanthellæ are numerous and smaller, elongated, homogeneously staining bodies, pointed at each end and quadrilateral in section.

Loc. South of Saya de Malha Bank, surface.

12. *Larva III.* (Pl. **24**, fig. 22.)

The larva is translucent, flattened orally and aborally and shrunken; its length is 1 mm. and diameter 1·66 mm. The stomodæum is long but of small diameter.

Of the mesenteries 8 are complete and 4 incomplete, but filaments are only found on the 4 complete laterals; the epithelium of the enterostome is continued on to the sides of these and then passes to form their filaments, spreading out over their greatly expanded edges (fig. 23). Beneath the latter occur spherical bodies, homogeneous parietally and vacuolated within, and some large nuclei are found near. What these bodies are is uncertain, but they occupy to some degree the position of reproductive cells. Muscles are not distinguishable.

The ectoderm is thin and compact, so thin indeed that the nematocysts with close spiral threads, which alone are present, are placed obliquely; mucous gland cells are abundant. The stomodæal ectoderm is thick with numerous granular glands but no nematocysts, and the filaments are similar but with long narrow nematocysts. The structureless lamella is thicker than the ectoderm and also than the endoderm, which is peculiarly thin.

Loc. Three miles N.W. of Desroches Atoll, 100 fathoms.

Larva with Twenty Mesenteries. (Pl. **24**, fig. 23.)

13. A single translucent, almost spherical larva, 1·5 mm. long by 1·2 mm. in diameter, with a deep depression on one side to which sponge spicules adhere, has 12 complete and 8 rudimentary mesenteries. The stomodæum is very short. Longitudinal muscles are present on some of the complete mesenteries. Filaments occur on all except the couple next to one of the directive pairs; they are shortest on the directives opposite to the pair mentioned above, but all stop some distance above the aboral end.

The ectoderm is a comparatively thick layer of vacuolated tissue with scattered nematocysts of a long and narrow form with somewhat irregularly and loosely coiled threads; a second large kind of nematocyst is found and granular glands are present. The ectoderm of the stomodæum is dense with the first kind of nematocysts and granular glands; it is continuous on the sides of the mesenteries and forms the filaments which have spirally-threaded nematocysts.

Loc. Lat. 3° 31′ S., long. 72° 27′ E., north of the Chagos Archipelago, 100 fathoms.

EXPLANATION OF PLATES.

Plate 23.

Zoanthidea.

Fig. 1. Larva I, *Zoanthina diamanta*, n.sp.: (*a*) side view; (*b*) oral surface.
Fig. 2. Transverse section of larva I, across aboral part.
Fig. 3. Larva II, *Zoanthina variabilis*, n.sp.: (*a*) side view; (*b*) oral surface.
Fig. 4. Transverse section of larva II, across aboral part.
Fig. 5. Larva III, *Zoanthina sladeni*, n.sp.: (*a*) side view; (*b*) oral surface.
Fig. 6. Transverse section of larva III showing the endodermal swellings and their attachment to the mesenteries.
Fig. 7. Larva IV, *Zoanthina gardineri*, n.sp.: (*a*) side view; (*b*) oral surface; (*c*) aboral surface.
Figs. 8—12. Transverse sections of larva IV, showing the mesenteries and mesenterial filaments, series drawn near the enterostome.

Plate 24.

Cerianthidea.

Fig. 13. Larva I, *Dactylactis cerfensis*, n.sp.: (*a*) side view; (*b*) oral surface.
Fig. 14. Larva II, *Ovactis superficialis*, n.sp.: (*a*) side view; (*b*) oral surface.
Fig. 15. Larva III, *Ovactis indiana*, n.sp.: (*a*) side view; (*b*) oral surface.

Hexactiniaria.

(1) Larvæ with 8 mesenteries.

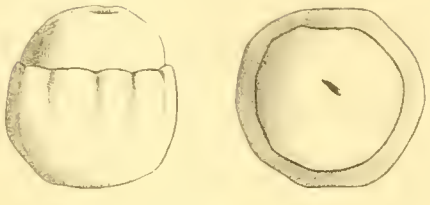
Fig. 16. Larva I: (*a*) side view; (*b*) oral surface.
Fig. 17. Larva II: (*a*) side view; (*b*) oral surface.
Fig. 18. Transverse section of larva II showing reflexed free edge of stomodæum within mesenterial chambers.
Fig. 19. Transverse section of larva II showing the convoluted mesenterial filaments, the loose endodermal tissue within the cœlenteron, the largest embryo cut longitudinally and a second embryo.

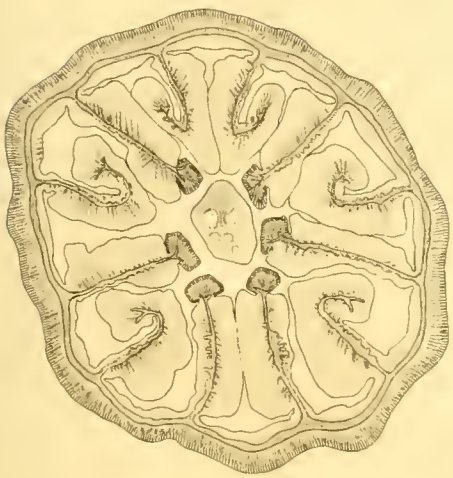
(2) Larvæ with 12 mesenteries.

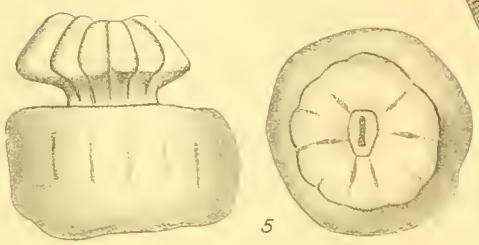
Fig. 20. Larva I: (*a*) side view; (*b*) oral surface.
Fig. 21. Larva II: (*a*) side view; (*b*) oral surface.
Fig. 22. Transverse section of part of the wall of the column of larva III and a mesentery expanded at its free edge in which are spherical bodies.

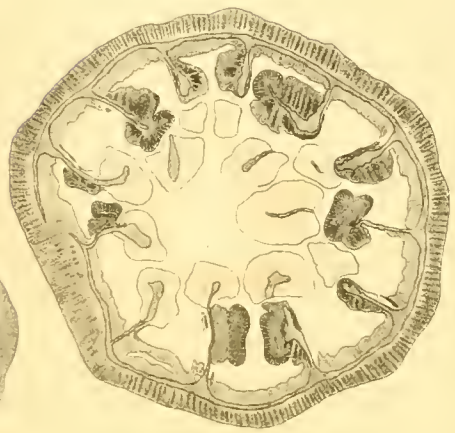
(3) Larva with 20 mesenteries.

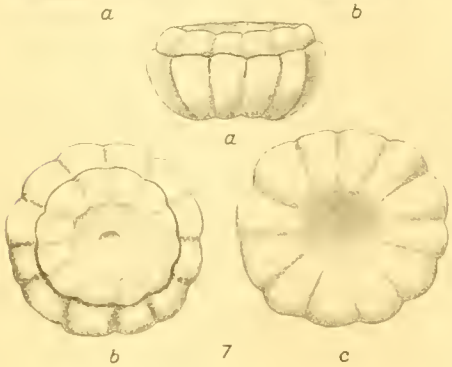
Fig. 23. Larva: (*a*) side view; (*b*) oral surface.

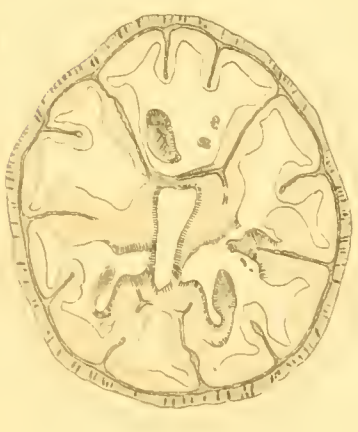


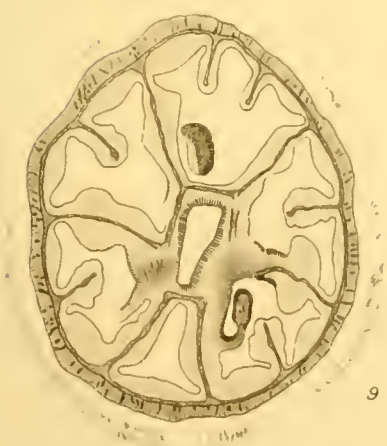












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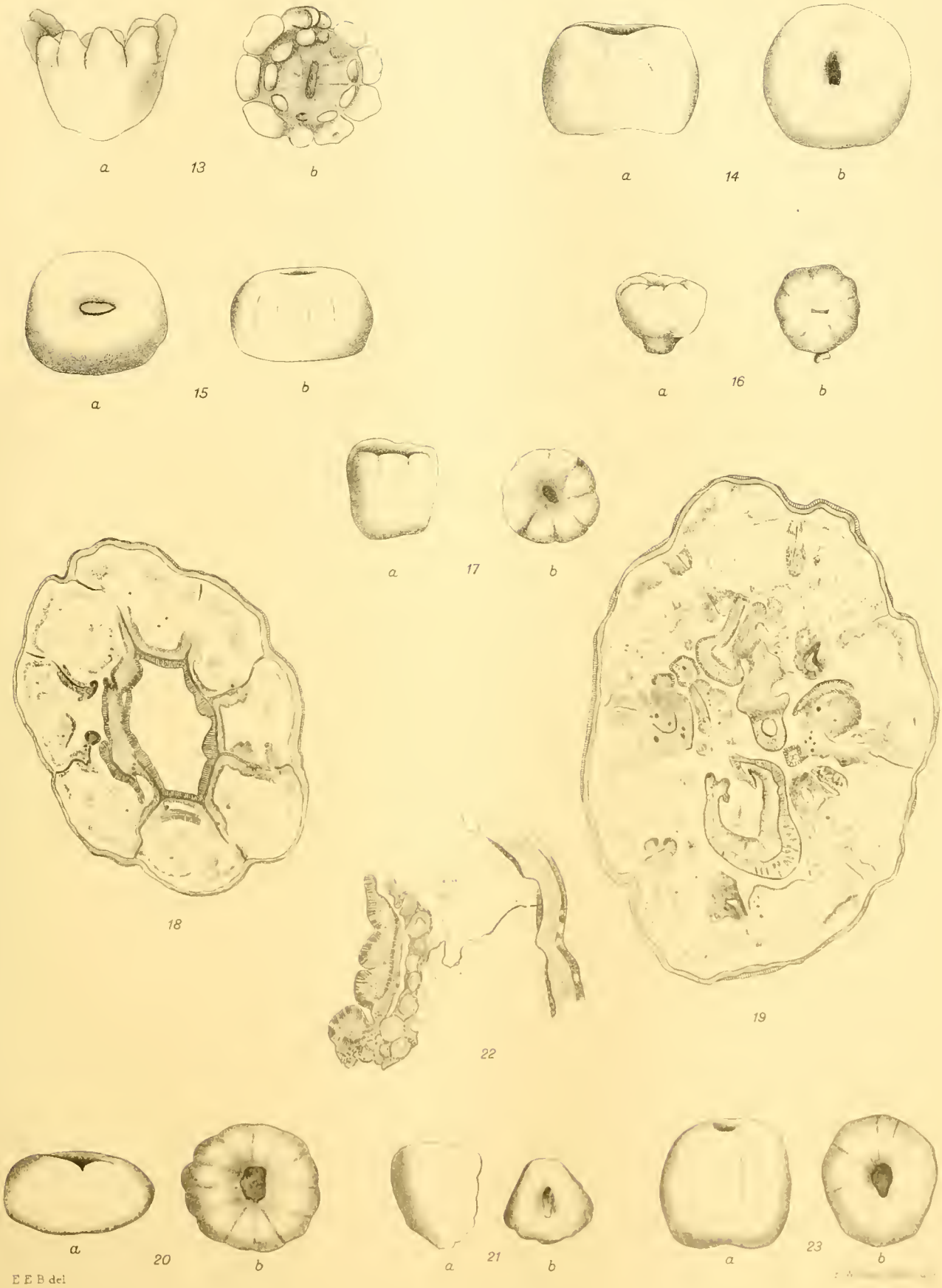

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PELAGIC ACTINIARIA

MARINE BIOLOGICAL WOODS LIBRARY

No. XXIV.—ON THE FERNS OF THE SEYCHELLES AND THE ALDABRA GROUP*.

By Carl Christensen, M.Sc. (Copenhagen).

(Communicated by Professor J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

(Plate 25.)

Read 6th June, 1912.

On the suggestion of Dr O. Stapf, Keeper of the Herbarium and Library, Royal Botanic Gardens, Kew, I undertook the determination of a collection of ferns made in the Seychelles by Professor J. Stanley Gardiner during the 'Sealark' Expedition in 1908, and the preparation of a complete list of the ferns of the Seychelles. It is true, the islands are not a *terra nova* for pteridography; nevertheless a revision of the fern-flora of the islands was thought desirable so as to bring it into line with modern ideas of pteridography.

The ferns of the Seychelles have been dealt with twice by J. G. Baker†, and later on by M. Kuhn ‡, who published a list of the ferns occurring in the islands. Whilst Baker knew 74 species of true ferns indigenous in the island, Kuhn enumerated 76 species, and my list includes 78 species.

It was an easy task to name the specimens in accordance with Baker's treatment, but as my ideas of the delimitation of not a few species differ essentially from those of Baker, who takes the species in a much broader sense, I examined the material critically and compared it with specimens which the authorities of Kew kindly forwarded to me for that purpose. For this my best thanks are due to Sir David Prain and Dr Stapf. As will be seen, I do not agree with all of Baker's determinations, and therefore my list differs in certain points from his. My nomenclature too is, of course, very different from his. With few exceptions, I follow the nomenclature of my 'Index Filicum,' which is quoted under each species. In that work the essential synonyms and references will also be found, wherefore it is unnecessary to repeat them here.

So far as is known, the Seychelles are inhabited by 78 species of ferns, all but one (*Ceropteris calomelanos*, which probably is introduced) indigenous in the islands. All these species were collected in the higher islands, Mahé and Silhouette; three or four were also found in Bird Island and Long Island. No fern is known from the other islands (Praslin, La Digue, and Curieuse). Prof. Gardiner has added four species to the fern-flora of the islands.

* Reprinted from Trans. Linn. Soc., ser. 2, Bot., vol. vii. pp. 409–25, pl. 45, 1912.

† J. G. Baker: "On the Seychelles Fern-Flora," in Trans. R. Irish Acad. vol. xxv. (1875), pp. 509–518, tabb. 28–31; 'Flora of Mauritius and the Seychelles' (1877).

‡ M. Kuhn: Cryptogamæ vasculares, in 'Botanik von Ost-Afrika' in Von der Decken's Reisen, vol. iii. part 1 (1879), pp. 68–69.

The composition of the fern-flora of the Seychelles is of some interest, because the group is situated so far east from the African continent. The following table shows the

Species of Western Distribution.			
American species extending eastwards to tropical Asia: **4.**	American species extending eastwards to the Seychelles: **5.**	Species confined to Africa and the South-eastern African islands: **10.**	Species confined to the South-eastern African islands: **6.**
Hymenophyllum polyanthos. *H. ciliatum.* *Elaphoglossum petiolatum.* *E. spathulatum.*	*Polypodium serrulatum.* *P. cultratum.* *Elaphoglossum martinicense.* *E. latifolium.* *Ophioglossum palmatum.*	*Trichomanes erosum.* *Oleandra articulata.* *Davallia chærophylloides.* *Stenochlæna tenuifolia.* *Pellæa Doniana.* *P. viridis.* *Pteris atrovirens.* *Adiantum rhizophorum.* *Lonchitis pubescens.* *Vittaria isoetifolia.*	*Hymenophyllum hygrometricum.* *Dryopteris strigosa.* *D. mauritiana.* *Aspidium pleiotomum.* *Diplazium sechellarum.* *Monogramma graminea.*

Species endemic in the Seychelles: **12.**	Species of Eastern Distribution.		Cosmopolitan Species: **11.**
	Species extending from tropical Africa to Polynesia: **18.**	Polynesian-Asiatic species reaching westwards to the South-eastern African islands, not in continental Africa: **10.**	
Cyathea sechellarum. *Dryopteris Hornei.* *D. Wardii.* *Leptochilus bipinnatifidus.* *Lindsaya Kirkii.* *L. Hornei.* *Asplenium complanatum.* *Stenochlæna Pervillei.* *Pteris Barklyæ.* *Polypodium Pervillei.* *P. albobrunneum.* *Elaphoglossum Hornei.*	*Microlepia speluncæ.* *Schizoloma ensifolium.* *Asplenium nidus.* *A. unilaterale.* *Adiantum caudatum.* *Actiniopteris australis.* *Pteris tripartita.* *Vittaria elongata.* *V. scolopendrina.* *Hymenolepis spicata.* *Polypodium punctatum.* *P. phymatodes.* *Cyclophorus spissus.* *Platycerium bifurcatum.* *Ceratopteris thalictroides.* *Gleichenia linearis.* *Marattia fraxinea.* *Angiopteris evecta.*	*Trichomanes cupressoides.* *Dryopteris cucullata.* *Odontosoria chinensis.* *Asplenium tenerum.* *A. affine.* *A. bulbiferum.* *Antrophyum immersum.* *A. callifolium.* *Schizæa digitata.* *Ophioglossum pendulum.*	*Dryopteris parasitica.* *Polystichum adiantiforme.* *Nephrolepis cordifolia.* *N. biserrata.* *Asplenium lunulatum.* *A. caudatum.* *Pteris biaurita.* *P. quadriaurita.* *Histiopteris incisa.* *Elaphoglossum conforme.* *Acrostichum aureum.*

distribution of the different species. Not considering the 11 cosmopolitan species, the remaining 65 species can be sorted into three groups :—

I. 9 (4+5) species have their centre in tropical America, 5 of these reaching their eastern limit in the Seychelles.

II. 28 (10+6+12) are confined to Africa, including the islands; 18 of these are not found in tropical Africa, but are endemic in the South-eastern islands, and 12 species are endemic in the Seychelles. Nearly all these endemic species may be regarded as specialized forms of groups which are richly developed in other regions, perhaps with the exception of *Pteris Barklyæ*, a peculiar species, which is probably most closely related to the Mascarene *Ochropteris*. If we take the relationship of the endemic species into consideration, we find that some of them point westwards (*Dryopteris Wardii*, *Polypodium Pervillei*, *Elaphoglossum Hornei*), others eastwards (*Leptochilus bipinnatifidus*, *Lindsaya Kirkii*, *L. Hornei*), while *Asplenium complanatum*, *Stenochlæna Pervillei*, and perhaps *Polypodium albobrunneum* are members of groups specially developed in the Mascarene and other South-eastern African islands.

III. 28 (18+10) species have their maximum in tropical Asia and Polynesia; 10 of these reach their western limit in the South-eastern African islands, and among these there are 4 species (*Asplenium tenerum*, *A. bulbiferum*, *Antrophyum callifolium*, and *Schizæa digitata*) which have their western boundary in the Seychelles.

The above may be summarized thus: the fern-flora of the Seychelles is a mixture of western and eastern species, the latter being in majority. Five species here reach their eastern limit, four their western. The fern-flora as a whole shows no peculiar character; 16 per cent. of the species are endemic.

From the Aldabra group only one species is known, the common mangrove fern, *Acrostichum aureum*.

HYMENOPHYLLACEÆ.

1. Trichomanes erosum, Willd. (?); Baker, Fl. Maur. 464; C. Chr. Ind. 639.—? *T. cuspidatum*, Kuhn, Bot. v. Ost-Afr. 68.

Common in the mountain forests, *Horne*. Silhouette, 2000 feet on trees, *Gardiner*!

It is with the greatest doubt that I refer the specimens from the Seychelles to *T. erosum*, Willd., which is a West-African species. In general habit the small leaves agree much more with *T. cuspidatum*, Willd., but they differ in the lack of an intramarginal, spurious vein and in the more distinct midrib and lateral veins. The fronds vary in shape, from circular and entire to triangular-oblong, 3 cm. long by 1–1¼ cm. broad, and irregularly repand or serrate, not regularly pinnatifid as in the true *T. erosum*. The form may be specifically distinct from *T. erosum* as well as from *T. cuspidatum*.

2. Trichomanes cupressoides, Desv. Prodr. 330, 1827; C. Chr. Ind. 638.—*T. obscurum*, var. *pectinata*, Mett.; Kuhn, Fil. Afr. 35. *T. rigidum*, Baker, Fl. Maur. 465.

Mahé, Silhouette, and Long Island, *Gardiner*! A typical fern on rocks on mountains, 2000–2500 feet.

This species, which was originally described from plants from the Seychelles, is common in all the South-east African islands. The Malayan *T. obscurum*, Blume, is very similar and very likely not specifically different.

3. Hymenophyllum polyanthos, Sw.; Baker, Fl. Maur. 462; C. Chr. Ind. 366.
Mahé, *Horne*, 146! *Gardiner*! Silhouette, on trees, 2000 feet, *Gardiner*!
Also found in Madagascar and tropical West Africa and widely spread in tropical America. A closely allied species, *H. Blumeanum*, Spr., occurs in tropical Asia.

4. Hymenophyllum ciliatum, Sw.; Baker, Fl. Maur. 462; C. Chr. Ind. 358.
Mahé, *Gardiner*! Widely spread in the tropics.

5. Hymenophyllum hygrometricum (Poir.), Desv.; Baker, Fl. Maur. 463; C. Chr. Ind. 362.
Mahé, *Perrillé*, *Horne*, *Gardiner*! in jungle anywhere and at any altitude, on trees or rocks. Silhouette, *Gardiner*!
The species is confined to the South-east African islands.

CYATHEACEÆ.

6. Cyathea sechellarum, Mett.; Baker, Fl. Maur. 467.
Mahé, *Horne*, 203! Silhouette, *Gardiner*!
Endemic.—I quote from the labels. Horne says: "Common at and above 1000 ft. in Mahé. Trunk in ravines 40–50 ft. Stipe 1–2 ft. Frond 4–9 ft. long, 2–4 ft. broad." Gardiner: "Part of a tree-fern [from the summit of the island of Silhouette, above 2120 ft.]. There are no trunks; the base rising only about 6 in. above ground." Gardiner's specimen is sterile and may, of course, have been taken from a young plant without a developed caudex. It is surprising that Gardiner did not collect the species in Mahé, where in 1871 it was common, according to Horne, which suggests that it is nearly or quite extinct. [It is still found in the indigenous jungles of the hill-tops of Central Mahé, but is disappearing. It was in a press from Mount Harrison which went astray.—J. S. G.]

POLYPODIACEÆ.

7. Dryopteris strigosa (Willd.), C. Chr. Ind. 295.—*Aspidium strigosum*, Willd.; Kuhn, Bot. v. Ost-Afrika, 37. *Nephrodium tomentosum*, Baker, Fl. Maur. 496, pro parte.
I list this species with some doubt among the ferns of the Seychelles, as I have seen only a single, rather scanty specimen from the islands (*Horne*, 678), determined by Baker as *Nephrodium tomentosum*. It does not belong to the true *Dryopteris tomentosa* (Thouars), but rather to *D. strigosa* (Willd.), according to Kuhn's delimitation of that species. Still the determination is rather doubtful, the basal pair of veins is truly united. The species is known from the Mascarenes and Madagascar.

8. Dryopteris parasitica (Linn.), O. Kuntze; C. Chr. Ind. 282.—*Nephrodium molle*, Baker, Fl. Maur. 499.

Mahé, *Horne*, 202!

The species taken in a broad sense is common in all tropical and subtropical regions. The form growing in the Seychelles is scarcely conspecific with the common American *D. mollis* (Jacq.), Hieron.

9. Dryopteris cucullata (Blume), Christ, Philippine Journ. Sci. Bot. ii. 194, 1907.—*Nephrodium cucullatum*, Baker, Fl. Maur. 498. *Dryopteris unita* (Linn.), O. Kuntze; C. Chr. Ind. 299.

Mahé, Silhouette, and Long Island, *Gardiner*! Typical fern of open spaces, 1000-2000 feet.

Distribution. Through tropical Asia and Polynesia, and common in the South-east African islands.

10. Dryopteris mauritiana (Fée), C. Chr.—*Nephrodium elatum*, var. *mauritianum*, Baker, Fl. Maur. 499.—*Aspidium procerum*, Bojer; Kuhn, Bot. v. Ost-Afrika, 41 (with description).

Var. Gardineri, C. Chr. (var. nov.).

A forma typica differt: *pinnis* brevioribus, ad 12 cm. longis 2 cm. basi latis, atro-viridibus, tenuiter membranaceis, ad costas costulasque supra albido-setosis, infra breviter et sparse hirtis, inter venas utrinque glabris, infra glandulis sessilibus subdense glandulosis; *laciniis* vix obliquis, obtusis; *venis* 8–10-jugis, pellucidis, basalibus 2–4 alternatim unitis; *indusiis* magnis, glabris.

Silhouette, *Gardiner*, Aug. 2, 1908. Mahé, *H. P. Thomasset* (this is more like the type).

The typical form of *D. mauritiana* was found previously in the Mascarenes and Comoros. The species is new to the Seychelles. The single leaf collected measures 1½ m. in length on a stipe scarcely 10 cm. long; it narrows downwards rather gradually through about 15 pairs of auriculiform pinnæ, ½–2 cm. long and broad, and hastate. It differs from the type mainly in the glandular underside and its patent, obtuse segments. The pinnæ taper from a broad base towards the acuminate apex.—I am inclined to believe that *Aspidium elatum*, Bojer, from Mauritius is specifically distinct.

11. Dryopteris Wardii (Baker), O. Kuntze; C. Chr. Ind. 301.—*Nephrodium Wardii*, Baker, Trans. R. Irish Acad. xxv. (1875), tab. 30; Fl. Maur. 496.

Mahé, *Ward*! *Horne*, 177! *Gardiner*! Silhouette, *Gardiner*!

Endemic. Rhizome horizontal, about 2 cm. thick, densely covered with glossy, brown, narrow acuminate scales, 1–2 cm. long. Stipe about 25 cm. long, slightly scaly at the base. Lamina about 50 cm. long, 40 cm. broad at the base, entirely glabrous. In habit not unlike *D. effusa* (Sw.), Urban, of tropical America.

12. Dryopteris Hornei (Baker), O. Kuntze; C. Chr. Ind. 271.—*Nephrodium Hornei*, Baker, Fl. Maur. 497.

Mahé, *Horne*, 182! Silhouette, *Horne*, 685!

Endemic. The pubescence is peculiar, the costæ and costulæ above are rufous-tomentose from short, articulated hairs (the typical pubescence of my subgenus *Ctenitis*); the veins beneath are densely covered with very short and thick, appressed glandular hairs, which in well-preserved specimens are glossy, golden yellow, in old specimens whitish, meal-like. I remember only one species which shows a similar pubescence, viz. *D. chrysotricha* (Baker), C. Chr., from Samoa, but in that the hairs are bright yellow.

13. Aspidium pleiotomum (Baker), Kuhn; C. Chr. Ind. 88.—*Nephrodium pleiotomum*, Baker, Tr. Roy. Irish Acad. xxv. (1875), tab. 31 B; Fl. Maur. 500.

Mahé, *Horne*. Silhouette, *Gardiner*!

Also Madagascar, fide *Baker*.

14. Polystichum adiantiforme (Forst.), J. Sm.; C. Chr. Ind. 578.—*Aspidium capense*, Willd.; Baker, Fl. Maur. 492. *Aspidium coriaceum*, Sw.; Kuhn, Bot. v. Ost-Afrika, 69.

Mahé and Silhouette, *Gardiner*! Sometimes partially epiphytic.

Distribution. Australia and Southern Polynesia. South Africa and adjacent islands. America from Cuba and Jamaica to Fuegia. A common species in most oceanic islands of the southern hemisphere. The numerous specimens collected by Gardiner are rather different, especially in size; some of them are scarcely more than bipinnatifid with a lamina not more than 10 cm. long, but fully fertile.

15. Leptochilus bipinnatifidus (Mett.), C. Chr. comb. nov.—*Chrysodium bipinnatifidum*, Mett.; Kuhn, Fil. Afr. 50. *Acrostichum repandum*, Baker, Fl. Maur. 514 (non Blume).

Mahé, *Boivin*! *Gardiner*! Silhouette, near the summit, *Gardiner*!

Perhaps endemic. It is also recorded from Réunion (*coll. Boivin*); but Jac. de Cordemoy has not seen it. All Boivin's specimens in the Museum of Paris seen by me are from the Seychelles.

I now think that this can safely be regarded as a species distinct from the Asiatic and Polynesian *L. cuspidatus*, C. Chr. (*Acrostichum repandum*, Blume). It differs in the more deeply cut pinnæ, which are truncate at the base, not cuneate, and in the more decidedly scaly costæ. The lowermost pinnæ are rather unequal-sided, the upper ones decurrent at the lower base, and the fertile pinnæ deeply cut into bluntly rounded lobes. The sterile fronds often have rooting tips.

16. Oleandra articulata (Sw.), Presl; Baker, Fl. Maur. 493; C. Chr. Ind. 466.

Mahé, *Gardiner*! Silhouette, near the summit, *Gardiner*! "Epiphytic, notable climber."

Distribution. Through tropical Africa to Cape Colony, and especially common in the South-east African islands.

17. Nephrolepis cordifolia (Linn.), Presl; Baker, Fl. Maur. 493; C. Chr. Ind. 453.—*N. tuberosa*, Presl; Kuhn, Bot. v. Ost-Afr. 69.
Seychelles, teste *Baker*. A cosmopolitan tropical species.

18. Nephrolepis biserrata (Sw.), Schott; C. Chr. Ind. 453.—*N. exaltata*, var. *biserrata*, Baker, Fl. Maur. 493.
Mahé, Silhouette, Long Island, Bird Island, *Gardiner*!

19. Humata repens (Linn. f.), Diels; C. Chr. Ind. 354.—*Davallia pedata*, Sw.; Baker, Fl. Maur. 468.
Mahé and Silhouette, *Gardiner*! Climber, dominant near the tops of trees; also in moss of the highest jungle in open places, Morne Pilot, 2700 feet, Mahé.
Distribution. From the South-east African islands through tropical Australia and Asia to Japan.

20. Davallia chærophylloides (Poir.), Steud.; C. Chr. Ind. 208.—*D. elata*, Baker, Fl. Maur. 469. *D. denticulata*, var. *intermedia*, Mett.; Kuhn, Fil. Afr. 158.
Mahé and Silhouette, *Gardiner*! Common in jungle, everywhere. In Silhouette it is said to be "a glacis fern, growing in moister holes in the rock." The fertile frond is densely glandulose throughout. The species is an African representative of and nearly related to the Asiatic and Polynesian *D. denticulata* (Burm.), Mett.; it is known from tropical West Africa, Natal, the Comoros, Madagascar, Mauritius, Rodriguez, and the Seychelles.

21. Microlepia speluncæ (Linn.), T. Moore; C. Chr. Ind. 428.—*Davallia speluncæ*, Baker, Fl. Maur. 469.
Mahé, *Gardiner*! *Thomasset*!
Cosmopolitan in the tropics of the Old World.

22. Odontosoria chinensis (Linn.), J. Sm.; C. Chr. Ind. 464.—*Lindsaya chinensis*, Mett.; Kuhn, Fil. Afr. 67. *Davallia tenuifolia*, Sw.; Baker, Fl. Maur. 469.
Seychelles (fide *Baker*, not seen).
Distribution. From Japan through tropical Asia and Polynesia and again in the South-east African islands.

23. Schizoloma ensifolium (Sw.), J. Sm.; C. Chr. Ind. 618.—*Lindsaya ensifolia*, Sw.; Baker, Fl. Maur. 472.
Mahe, *Gardiner*! *Thomasset*!
Distributed through the tropics of the Old World.

24. Lindsaya Kirkii, Hook.; Baker, Trans. R. Irish Acad. xxv. (1875), tab. 28; Fl. Maur. 473; C. Chr. Ind. 394.—*L. Pervillei*, Mett.; Kuhn, Fil. Afr. 17 et 68.

Mahé, *Gardiner*! *Thomasset*. Silhouette, *Gardiner*!

Endemic. A large pretty species, common in the islands, growing on the ground and often partially epiphytic.

25. Lindsaya Hornei (Baker), C. Chr. Ind. 210 (omitted under *Lindsaya*).—*Davallia Hornei*, Baker, Fl. Maur. 470.

Mahé, *Horne*, 677!

Endemic, common *fide* Horne, but not collected by Gardiner. It is a true *Lindsaya*, but a rather problematic species. It is, perhaps, a small form of *L. Kirkii*, with which it agrees in soral characters and basal scales; still the shape of the segments is somewhat different, their lower edge being much upcurved while in *L. Kirkii* it is decurved.

26. Diplazium sechellarum (Baker), C. Chr. Ind. 238.—*Asplenium sechellarum*, Baker, Fl. Maur. 491.

Mahé, *Bouton*! *Horne*! "Common in the damp shady forests," but not collected by Prof. Gardiner.

According to Baker also found in Madagascar. It is a large, tripinnatifid species, related to the Asiatic *D. polypodioides*, Blume, characterized by the muricated rachis.

27. Asplenium nidus, Linn.; Baker, Fl. Maur. 491; C. Chr. Ind. 123.

Mahé, *Gardiner*! *Thomasset*! Silhouette, *Gardiner*!

Distribution. Through tropical Polynesia, Australia, and Asia, extending westwards to tropical West Africa.

28. Asplenium unilaterale, Lam.; C. Chr. Ind. 136.—*A. resectum*, Sm.; Baker, Fl. Maur. 485.

Seychelles, *Kirk*!

Distribution. Through the tropics of the Old World.

29. Asplenium lunulatum, Sw.; Baker, Fl. Maur. 486.

Mahé, *Horne*, 404 (not seen).

Distribution. Regarded as a collective species, *A. lunulatum* is widely spread through the tropics; the typical form is South African.

30. Asplenium tenerum, Forst.; Baker, Fl. Maur. 486; C. Chr. Ind. 134.

Mahé, *Horne*, 684!

Spread through tropical Polynesia and Asia; it is not known from the other African islands.

31. Asplenium (Euasplenium) complanatum, C. Chr. (sp. nov.). (Pl. 25, figs. 1–3.)

Rhizoma obliquum, fere 1 cm. crassum, squamis parvis, ovatis, nigrescentibus, subdense onustum. *Stipites* numerosi, subapproximati, virides, glabri, complanati, supra late

canaliculati, sursum anguste alati, ad 7 cm. longi. *Lamina* pinnata, lanceolata, usque ad 20 cm. longa, 5 cm. lata, versus apicem pinnatifidum seu grosse serratum, breviter acuminata, viridis, omnino glabra, textura carnosula. *Rachis* complanata, a basi ad apicem alata, alis 1 mm. latis. *Pinnæ* numerosæ, $2\frac{1}{2}$ cm. longæ, 1 cm. latæ, suberectæ, inferiores vix abbreviatæ, breviter petiolatæ, ad rachin articulatæ, basi inferiore cuneatæ, superiore truncatæ, sæpe subauriculatæ, marginibus apiceque obtuso grosse serratis. *Venæ* indistinctæ, simplices, obliquæ. *Sori* mediales, 1–2 mm. longi, 1 mm. lati, indusiis margine integris.

Silhouette, *Gardiner*!

This new species resembles the Australian *A. obtusatum*, Forst., in colour and texture and the short thick sori, but in general habit it is not unlike *A. tenerum*, from which it differs in its short sori, fleshy texture, and winged rachis. It is a well-known fact that several pinnate species of *Asplenium* vary extraordinarily in cutting. The most cut forms are often dareoid, *i. e.* the ultimate segments are narrow with the sori marginal. Such dareoid varieties look very different from the pinnate forms of the same species, and they are commonly described as proper species. It has, however, been proved by botanists who have studied the different forms in the field that certain old species of *Darea* really are dareoid forms of species which, in the "normal" state, are pinnate only. Thus is *Darea bifida*, Bory, the dareoid variety of *A. lineatum*, Sw.; *D. Belangeri*, Bory, of *A. tenerum*. Dareoid forms are especially common in the Mascarenes and South Africa, and some of them are not known in the pinnate state. My proposed new species, *A. complanatum*, may be the pinnate form of a species which so far is known as dareoid only, viz. *Asplenium borbonicum*, Hook., a species from Réunion and Mauritius, but not known from the Seychelles. It is very probable that such is the case, but I cannot prove it at present, and I therefore think it best to describe the new form as a new species.

32. Asplenium caudatum, Forst.; Baker, Fl. Maur. 488; C. Chr. Ind. 104.

Mahé, *Horne*, 668! *Thomasset*! Silhouette, *Gardiner*! "A typical fern of the 1000–2000 feet zone in fairly open places."

Var. minor, C. Chr. (var. nov.):—Lamina 20 cm. longa, pinnis 3 cm. longis, $\frac{1}{2}$–1 cm. latis, apice acutis nec caudatis.

Mahé and Silhouette, *Gardiner*!

This variety is a very doubtful form, in size and general habit very much resembling *A. pellucidum*, Lam., to which species Baker (Fl. Maur. 487) referred a specimen from the Seychelles (*coll. Kirk*!). It differs from that species in its lower pinnæ being not at all reduced. I think I am right in considering it a small form of *A. caudatum*, from which it differs in its small size and non-caudate pinnæ, whilst it agrees with it in colour, texture, pubescence, and other characters. A specimen from Silhouette (*Gardiner*) is exactly intermediate between the large *A. caudatum* and the variety.

A. caudatum is a cosmopolitan tropical species.

33. Asplenium affine, Sw.; C. Chr. Ind. 100.—*A. cuneatum*, var. *affine*, Baker, Fl. Maur. 489.

Mahé, *Gardiner*! *Thomasset*!

Distribution. Common in the South-east African islands; tropical Asia and Polynesia. It may be a variety of *A. cuneatum*, Lam., the typical form of which is West Indian. Some of the leaves are proliferous at the apex (conf. *A. viviparioides*, Kuhn).

34. Asplenium bulbiferum, Forst.; Baker, Fl. Maur. 489; C. Chr. Ind. 103.

Seychelles, *Kirk* (fide *Baker*, not seen).

Whether this is the true *A. bulbiferum*, Forst., I cannot say. Kuhn did not list *A. bulbiferum* as an African species.

35. Stenochlæna Pervillei (Mett.), Underw. Bull. Torr. Club, xxxiii. (1906), 49, fig. 1.—*Lomariopsis Pervillei*, Mett.; Kuhn, Fil. Afr. 53. *Acrostichum sorbifolium*, Baker, Fl. Maur. 513.

Mahé, *Gardiner*! *Thomasset*!; common over 1000 feet. Silhouette, *Gardiner*!; rare epiphytic climber.

Endemic. The upper base of the sterile pinnæ is commonly nearly parallel to the rachis, and not so cuneate as shown in Underwood's figure quoted above.

36. Stenochlæna tenuifolia (Desv.), T. Moore; C. Chr. Ind. 626.—*Acrostichum tenuifolium*, Baker, Fl. Maur. 513. *Polybotrya tenuifolia*, Kuhn, Fil. Afr. 52.

Seychelles, *Pervillé*, 464 (fide *Kuhn*, not seen).

Distribution. Tropical and South Africa, with the adjacent islands.

37. Ceropteris calomelanos (Linn.), Underw.; C. Chr. Ind. 169.

Mahé, *Gardiner*!

An American species, probably introduced, as in several tropical countries in the Old World.

38. Pellæa Doniana, Hook.; Baker, Fl. Maur. 477; C. Chr. Ind. 479.

Mahé, *Gardiner*! *Thomasset*! Silhouette, *Gardiner*! "This fern occurs right down in the mangroves at Grande Barbe."

Spread through tropical Africa; not known from the other islands.

39. Pellæa viridis (Forsk.), Prantl; C. Chr. Ind. 483.—*P. hastata*, Link; Baker, Fl. Maur. 478. *Pteridella viridis*, Mett.; Kuhn, Bot. v. Ost-Afr. 16.

Seychelles (fide *Baker*, not seen).

Through tropical Africa to the Cape and the South-eastern islands.

40. Adiantum caudatum, Linn.; Baker, Fl. Maur. 474, part.; C. Chr. Ind. 24.

Seychelles, *Kersten*, 9 (fide *Kuhn*, not seen).

Tropical Africa and Asia.

41. Adiantum rhizophorum, Sw.; Kuhn, Fil. Afr. 66; C. Chr. Ind. 33.—*A. caudatum*, part., Baker, Fl. Maur. 474.
Seychelles, *Pervillé*, 212 (fide *Kuhn*, not seen).
Southern Africa and adjacent islands.

42. Actiniopteris australis (Linn. fil.), Link; C. Chr. Ind. 21.—*Pteris dichotoma*, var. *elongata*, Mett.; Kuhn, Fil. Afr. 80. *P. dichotoma*, Baker, Fl. Maur. 481. *Actiniopteris dichotoma*, Mett.; Kuhn, Bot. v. Ost-Afr. 68.
Seychelles, *Pervillé* (fide *Kuhn*, not seen).
Distributed from Africa with the South-eastern islands to tropical Asia.

43. Pteris Barklyæ (Hook.), Mett.; Kuhn, Fil. Afr. 77 (as *Barkleyæ*).—*Pellæa Barklyæ*, Baker, Fl. Maur. 477; C. Chr. Ind. 478.
Seychelles, *Kirk*! *Lady Barkly*! *Gardiner*! (Mahé).
Endemic. A very distinct species, the proper place of which must be in the genus *Pteris*. The essential difference between *Pellæa* and *Pteris* is the different habit; in soral characters the two genera agree. In *Pellæa* the sterile tips of the fertile segments are entire, in *Pteris* nearly always distinctly serrated; in this character the present species agrees with *Pteris*. It is perhaps nearest related to *Ochropteris pallens* (Sw.), J. Sm., from the Mascarenes, resembling it closely in cutting, but the sori are truly pteridoid and the rachis is purplish and polished.

44. Pteris biaurita, Linn.; Baker, Fl. Maur. 481; C. Chr. Ind. 593.
Seychelles (fide *Baker*, not seen).

45. Pteris biaurita, Linn., subsp. P. quadriaurita, Retz.; Baker, Fl. Maur. 480.—*P. nemoralis*, Willd.; Kuhn, Fil. Afr. 86.
Seychelles, *Kersten*, 20 (fide *Kuhn*). Mahé, *Gardiner*!
P. biaurita, with its subspecies *quadriaurita*, is cosmopolitan in the tropics.

46. Pteris atrovirens, Willd.; Baker, Fl. Maur. 482; C. Chr. Ind. 593.
Mahé, *Horne*, 652 (fide *Baker*, not seen).
Spread through tropical Africa; not found in the other islands of the Indian Ocean.

47. Pteris tripartita, Sw.; C. Chr. Ind. 608.—*P. marginata*, Bory; Baker, Fl. Maur. 482.
Silhouette, *Gardiner*! *Pervillé* (fide *Kuhn*).
Spread through the tropics of the Old World.

48. Histiopteris incisa (Thunb.), J. Sm.; C. Chr. Ind. 352.—*Pteris incisa*, Baker. Fl. Maur. 483.
Mahé, *Gardiner*! *Pervillé*, 75 (fide *Kuhn*).
Through the tropics and the southern temperate regions.

49. Lonchitis pubescens, Willd.; Baker, Fl. Maur. 475; C. Chr. Ind. 409.—*L. hirsuta*, Kuhn, Bot. v. Ost-Afr. 10.
Seychelles, *Kirk* (fide *Baker*, not seen).
Through tropical and Southern Africa, with the Eastern islands.

50. Monogramma graminea (Poir.), Schkuhr; Baker, Fl. Maur. 501; C. Chr. Ind. 430.
Seychelles, *Perville* (fide *Kuhn* and *Baker*, not seen).
Confined to the Seychelles and Mascarenes.

51. Vittaria elongata, Sw., var. ensiformis (Sw.).—*V. ensiformis*, Sw.; C. Chr. Ind. 653. *V. plantaginea*, Bory; Kuhn, Fil. Afr. 55. *V. elongata*, Baker, Fl. Maur. 471.
Silhouette, 2000 feet, *Gardiner*!
The variety is probably confined to the Mascarenes and Seychelles; the species, in several forms, is widely spread through the tropics of the Old World.

52. Vittaria isoetifolia, Bory; Kuhn, Fil. Afr. 55; C. Chr. Ind. 654.—*V. lineata*, Baker, Fl. Maur. 471.
Mahé, *Gardiner*! *Thomasset*! Silhouette, *Gardiner*!
South Africa and adjacent islands. The determination is rather doubtful.

53. Vittaria scolopendrina (Bory), Thwait.; Baker, Fl. Maur. 471; C. Chr. Ind. 655.
Mahé and Silhouette, near the summit, *Gardiner*!
Distribution. From Mozambique through tropical Asia to Samoa.

54. Antrophyum immersum (Bory), Mett.; Baker, Fl. Maur. 509; C. Chr. Ind. 60.
Seychelles (fide *Baker*, not seen).
Mascarenes, Seychelles, and Malesia.

55. Antrophyum callifolium, Blume; C. Chr. Ind. 59.—*A. reticulatum*, Baker, Fl. Maur. 509.
Mahé, *Horne*, 683! Silhouette, near summit, very scarce, *Gardiner*!
Distribution. Malesia, Polynesia, Seychelles.
According to Mettenius's description in Ann. Mus. Lugd.-Bat. iv. 171, this is *A. callifolium*, not *A. reticulatum* (Forst.), Kaulf.

56. Hymenolepis spicata (Linn. fil.), Pr.; C. Chr. Ind. 356.—*Acrostichum spicatum*, Linn. fil.; Baker, Fl. Maur. 514.
Seychelles (fide *Baker*, not seen).
Spread through the tropics of the Old World, continental Africa excluded; common in the South-east African islands.

57. Polypodium Pervillei, Mett.; Kuhn, Fil. Afr. 150; Baker, Trans. R. Irish Acad. xxv. tab. 31 A; Fl. Maur. 504; C. Chr. Ind. 552.
Mahé, *Perville*! *Gardiner*! On rocks in streams or damp tree-trunks over 1000 feet.
Endemic.

58. Polypodium serrulatum (Sw.), Mett.; Baker, Fl. Maur. 504; C. Chr. Ind. 563.
Mahé, *Thomasset*!

Distribution according to Hieronymus ('Hedwigia,' vol. xliv. 80):—Tropical America (common), tropical West Africa, Madagascar, Mascarenes, Seychelles.

59. Polypodium albobrunneum, Baker, Fl. Maur. 505; C. Chr. Ind. 508.—*P. sechellarum*, part., Baker, Fl. Maur. 505.
Mahé, *Horne*, 681! 682! *Gardiner*! *Thomasset*! Silhouette, near the summit, scarce; epiphyte high up on trees.
Endemic.

P. sechellarum, Baker, was founded partly on a small sterile plant from Mahé (*Horne*, n. 194) and partly on a single leaf from Mauritius (*Lady Barkly*), both of which I have seen. The description in Fl. Maur. is evidently written from the Mauritian specimen, which belongs to a species distinct from *P. albobrunneum*. The specimen from Mahé is, I have no doubt, only a small sterile plant of *P. albobrunneum*; some of the rather numerous specimens collected by Gardiner agree exactly with it. *P. sechellarum*, Baker, is thus not known from the Seychelles, and the name therefore is very inappropriate.

60. Polypodium cultratum, Willd., var. elasticum (Bory).—*P. elasticum*, Bory. *P. asplenifolium*, var. *minor*, Mett.; Kuhn, Fil. Afr. 146. *P. cultratum*, Baker, Fl. Maur. 505.
Mahé, on tree-trunks over 2000 feet, rather scarce, *Gardiner*! *Thomasset*!

P. cultratum (type) is a tropical American species, and is also found in the island of Fernando Po, Guinea. The variety *elasticum* is apparently confined to the Mascarenes and Seychelles. It is very like the type, especially some of its smaller forms, but it is more hairy, with longer and shorter hairs mixed on the upper surface and along the margins.

61. Polypodium punctatum (Linn.), Sw.; C. Chr. Ind. 557.—*P. irioides*, Lam.; Baker, Fl. Maur. 507.
Mahé, *Thomasset*!
Through the tropical regions of the Old World.

62. Polypodium phymatodes, Linn.; Baker, Fl. Maur. 508; C. Chr. Ind. 553.
Mahé, *Gardiner*! *Thomasset*! Bird Island, in dry places, *Fryer*! Long Island, *Gardiner*! Silhouette, *Gardiner*!

Distribution. From South Africa through tropical Africa, Asia, Australia, and Polynesia to Corea.

63. Cyclophorus spissus (Bory), Desv.; C. Chr. Ind. 201.—*Polypodium spissum*, Bory; Kuhn, Fil. Afr. 153. *P. adnascens*, Baker, Fl. Maur. 506.
Seychelles (fide *Kuhn* and *Baker*, not seen).
South Africa and the Eastern islands; scattered through tropical Asia.

64. Elaphoglossum martinicense (Desv.), T. Moore, var. obtusum, C. Chr. (var. nov.).—*Acrostichum simplex*, var. *martinicense*, Baker, Fl. Maur. 510.

Mahé, *Horne*, 676! *Gardiner*! Not uncommon in Mahé and Silhouette (*Horne*).

Differs from the typical *E. martinicense* of the West Indies, which certainly is specifically different from *E. simplex*, by the shortly acute or rounded-obtuse apex of the lamina (not long and gradually acuminate) and by the long decurrent base of the sterile frond, the stipe being winged nearly to the base. Sterile lamina 10–20 cm. long by 1 cm. broad, very coriaceous; fertile lamina shorter but of the same breadth on a much longer stipe. This variety may be the same as *Acrostichum lineatum*, Kuhn (Christ. Mon. Elaph. 146), from Madagascar, but that is said to have a stipe 10 cm. long. Other similar forms are found in tropical West Africa. The true *E. martinicense* is probably confined to the West Indian islands.

65. Elaphoglossum conforme (Sw.), Schott; C. Chr. Ind. 304.—*Acrostichum conforme*, Sw.; Baker, Fl. Maur. 511.

Mahé and Silhouette, *Gardiner*!

Through the tropical regions.

66. Elaphoglossum latifolium (Sw.), J. Sm.; C. Chr. Ind. 309.—*Acrostichum latifolium*, Sw.; Baker, Fl. Maur. 511.

Mahé and Silhouette, *Gardiner*!

I follow Baker in referring the fern in question to *E. latifolium*, which by some authors is considered an exclusively American species. I really cannot see how the specimens can be safely distinguished from the American form. Christ, in his monograph of the genus, refers all the large glabrous forms of *Elaphoglossum* from the South-east African islands to *E. Sieberi* (Hook. & Grev.); but that species is said to have linear-subulate, almost black scales; our specimens have, however, light brown lanceolate scales, resembling those of the genuine *E. latifolium*. I am inclined to believe that the form from the Seychelles is just the same as *Acrostichum ellipticum*, Fée, Acrost. tab. 4, referred by Baker to *E. Sieberi*; Fée describes the scales as "aurantiaco-rufidulis." It resembles also very much the Javan *E. callifolium* (Blume), T. Moore. Kuhn (Bot. v. Ost-Afr. 69) lists *E. Sieberi* among the ferns of the Seychelles, but his *A. Sieberi* is no doubt the same as *E. latifolium* as understood here.

E. latifolium is widely distributed in tropical America; a form very much resembling that from the Seychelles is known from the Comoros.

67. Elaphoglossum Hornei, C. Chr. (sp. nov.). (Pl. 25, figs. 4–7.)

Syn.: *Acrostichum viscosum*, var. *glabrescens*, Baker, Fl. Maur. 512 (non *A. glabrescens*, Kuhn).

Rhizoma breviter repens, paleis rufis crispis anguste lincaribus subintegris dense onustum. *Stipites* dense fasciculati, stricti, parce paleacei denique nudi, 1½–2 mm. crassi, 5–7 cm. longi. *Lamina* sterilis lanceolata, usque ad 35 cm. longa, medio 4 cm. lata, apice breviter attenuata, acuta, basi longe cuneata, papyracea vel subcoriacea, præter costam paleis minutis rufis laceratis subtus parce instructam ubique

nuda. *Venæ* plerumque furcatæ, intra marginem callosam apicibus subelavatis desinente. *Lamina* fertilis similis, 15–17 cm. longa, 2 cm. lata, stipite longiore (10 cm.).

Mahé, *Horne*, 171! (type), *Gardiner*! Silhouette, 2000 feet, *Gardiner*!

I cannot agree with Baker in regarding this as a variety of *E. petiolatum*. It differs from that species in its much larger leaves, its glabrous surfaces, and the different scales of the rhizome. In *E. petiolatum* the scales are dark brown, glossy, very narrow, and nearly hair-like. In general habit our new species resembles not a little *E. flaccidum*.

68. Elaphoglossum petiolatum (Sw.), Urb., var. salicifolium (Willd.).—*Acrostichum salicifolium*, Willd. *A. viscosum*, Baker, Fl. Maur. 512.

Mahé and Silhouette, *Gardiner*!; apparently common.

Most specimens are rather densely clothed all over both surfaces with minute pseudo-stellate scales.

E. petiolatum type is common in tropical America; the variety is frequent in the South-east African islands, and Kuhn refers specimens from tropical West Africa to it. Very similar forms occur in Southern China and the Himalaya (*A. neriifolium*, Wall.).

69. Elaphoglossum spathulatum (Bory), T. Moore; C. Chr. Ind. 316.—*Acrostichum spathulatum*, Bory; Baker, Fl. Maur. 512.

Mahé, *Horne* (fide *Baker*, not seen).

Distribution. South Africa with the adjacent islands, Ceylon, tropical America.

70. Acrostichum aureum, Linn.; Baker, Fl. Maur. 514; C. Chr. Ind. 5.

Seychelles; Mahé, *Gardiner*! Silhouette, *Gardiner*! Bird Island, *Fryer*! Aldabra Group, near Pte. Hodone, *R. Dupont*, 36!

71. Platycerium bifurcatum (Cav.), C. Chr. Ind. 496.—*P. alcicorne*, Baker, Fl. Maur. 515.

Seychelles (fide *Baker*, not seen).

East Africa and islands, Australia and New Caledonia, Lord Howe Island.

As suggested in my 'Index,' it is uncertain whether this East-African *Platycerium* is the same as the true *P. bifurcatum* from Australia.

PARKERIACEÆ.

72. Ceratopteris thalictroides (Linn.), Brongn.; C. Chr. Ind. 169.

Mahé, Anse Royale, and Terné, *Gardiner*! Silhouette, Grande Barbe, *Gardiner*!

New to the Seychelles. The true *C. thalictroides* is widely distributed through the Old World tropics, and according to Benedict (Bull. Torr. Club, vol. xxxvi. (1906) 469) it is probably confined to the Old World, the American forms belonging to three different species.

GLEICHENIACEÆ.

73. Gleichenia linearis (Burm.), C. B. Clarke; C. Chr. Ind. 322.—*G. dichotoma*, Baker, Fl. Maur. 460.

Mahé, Silhouette, and Long Island, *Gardiner*!

Common through the tropical and subtropical regions of the Old World, and closely related forms occur in tropical America.

SCHIZÆACEÆ.

74. Schizæa digitata (Linn.), Sw.; C. Chr. Ind. 616.—*S. digitata*, var. *intermedia* (Mett.), Baker, Fl. Maur. 516.

Mahé, *Gardiner*!

This is the genuine *S. digitata*, a species widely distributed through tropical Asia and Polynesia, but, so far as Africa is concerned, known from the Seychelles only. The locality Madagascar is doubtful. Baker referred the Seychelles specimens to *S. intermedia*, a species from New Caledonia distinctly different from *S. digitata* by having the sporangia intermixed with long paraphyses.

MARATTIACEÆ.

75. Marattia fraxinea, Sm.; C. Chr. Ind. 414.

Mahé, *Gardiner*! New to the group.

Distributed through the tropics of the Old World.

76. Angiopteris evecta (Forst.), Hoffm.; Baker, Fl. Maur. 517.

Mahé and Silhouette, *Gardiner*!

Widely spread through the Old World tropics.

OPHIOGLOSSACEÆ.

77. Ophioglossum pendulum, Linn.; Baker, Fl. Maur. 517; C. Chr. Ind. 471.

Mahé, *Gardiner*! *Thomasset*! Silhouette, *Gardiner*! Apparently common.

Tropical Asia, Australia, and Polynesia, the South-east African islands, but not known from the African continent.

78. Ophioglossum palmatum, Linn.; Kuhn, Fil. Afr. 178; C. Chr. Ind. 471.

Seychelles, *Perrillé* (fide *Kuhn*, not seen).

Florida and tropical America; Madagascar, Réunion, and Seychelles.

EXPLANATION OF PLATE 25.

Fig. 1. *Asplenium complanatum*, natural size.
2. Portion of pinna enlarged, showing sori.
3. Sporangium, enlarged.
4. *Elaphoglossum Hornei*, natural size.
5. Portion of frond, showing venation.
6. Part of fertile frond, enlarged.
7. Sporangium, much enlarged.

M. Smith del.
J.N Fitch lith.

West, Newman imp.

1-3 ASPLENIUM COMPLANATUM 4-7 PLATYCERIUM HORNEI

No. XXV.—DIPTERA, PSYCHODIDÆ.

By the Rev. A. E. Eaton, M.A., F.E.S.

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

(Plate **26**.)

Read 16th January, 1913.

Of this Family of the Diptera eight species were obtained in the Seychelles by Mr Hugh Scott, and a ninth on the distant island of Aldabra by Mr J. C. F. Fryer. Six of the nine are new and admit of description; two were published long ago; and the one remaining can only be placed in its genus at present. The nine species are:

Brunettia indica, sp. nov.
Panimerus scotti, gen. et sp. nov.
Notiocharis insignis, gen. et sp. nov.
Psychoda alternata, Say.
Psychoda solitaria, sp. nov.?
Philosepedon humeralis, Hoffmann.
Philosepedon triungulatus, sp. nov.
Telmatoscopus fryeri, sp. nov.
Sycorax, sp.

So far as they are now known, the genera of the whole Family can be assorted into four principal Groups, by referring to the wings and antennæ. These Groups, not necessarily of the status of Sub-Families or Tribes, contain nearly related forms and distant kindred, like a chart depicting archipelagoes with solitary outliers. In the Seychelles two of these Groups only are represented. For reference a figure (Pl. **26**, fig. 1) is given of a wing of a ♀ fly selected out of another Group, and lettered in accordance with Comstock and Needham's terminology of nervures.

This figure (Pl. **26**, fig. 1) resembles the neuration of wings of all of the genera (except *Sycorax*) in the collection in one particular: the anterior basal cell is bounded in front by the main stem of the radial sectors, almost exclusively, so close to the wing-roots does R^4 branch off from R^1. But the first six of the genera all (except *Notiocharis*) have wings apically pointed at the end of R^5; and none of the eight (except *Panimerus*) has the Sectorial Fork pedicellate to the anterior basal cell.

Brunettia is an Indo-Malayan genus, nearly related to the European genus *Pericoma* Halid., Walk., Ins. Brit. Dipt. vol. iii. p. 256 (1856); as restricted by Eaton, Ent. M. Mag., ser. 2, vol. vii. p. 121 (June 1897).

Panimerus, represented by several species in Europe and North Africa, contains the Baltic Amber insect named *Pericoma formosa* by Meunier, Ann. Mus. Nat. Hungarici, iii. p. 243, pl. 7, figs. 1 and 2, antennæ ♂ and ♀ (1905).

Notiocharis may be endemic to the Seychelles.

Philosepedon and *Psychoda* seem to be fossil in Baltic Amber (*cf.* Meunier, *op. cit.*, pl. 7, figs. 5 and 6) under the names *Psychoda oxyptera* Loew, and *Psychoda eocenica* Meun., respectively.

The Aldabran *Telmatoscopus* very likely frequents still or slowly moving waters.

No citation can be made of American *Psychodidæ*, because they have not yet been assorted.

The seventh genus (*Sycorax*) represented in the collection belongs to a different group, which is outlined on pp. 430—431.

Brunettia, Annandale. (Pl. **26**, fig. 2 *a—f* and fig. 3 *a—f.*)

Brunettia Annandale, Records Ind. Mus. vol. v. part 3, pp. 141—144, pl. 12 (Sept. 1910).

Diplonema Annandale, Journ. Asiatic Soc. Bengal, vol. iv. p. 353 (1908) and Records Ind. Mus., vol. iv. p. 39 (1910); *nec* Loew (1845).

Distinguished from *Pericoma*, restrict., by the subsequent radial sectors branching at acute angles unilaterally from R^2 within approximately the basal $\frac{1}{3}$ of the wing's length; wing-markings of small white scale spots by the ends of most of the nervures; wing-membrane in ♂ to a large extent densely squamate beneath with thin longitudinally striate scutiform or cuneate scales; joints of the antennal flagellum furnished each with a pair of long narrow flattened articular appendages tapering gradually to their points, laxly sub-spiral and widely arcuate, that reach to the base of the following joint; and by the inferior ♂ genital appendages having indefinitely numerous capillaceous tenaculæ with expanded tips. Number of joints in the antennæ, and place of the apical extremity of the wing varying with the species. Type *Brunettia superstes* Annandale, and one other species described. *Distribution:* Indo-Malaysia and the Seychelles.

1. *Brunettia indica*, sp. nov. (Pl. **26**, fig. 2 *a—f* and fig. 3 *a—f.*)

Antennæ 15-jointed in both sexes: 1st joint in ♂ very little shorter than the next two combined; 2nd globular; 3rd subequal to the fourth, fusiform—urceolate in outline with slight gibbosity, followed by gibbous obclaviform or pernoid joints; 14th oval; 15th rounded, apiculate. Wings ♂ ovate, acute; four veins strong, R^1, R^2, R^5 and Cu^2; the other radial sectors, the median and Cu^1 basewards attenuated and the vein A thin: R^4 branching from R^2 a little nearer to the fold of deflection than to the axil of the sectorial fork; the pedicel of this fork $\frac{1}{2}$ the length of the pedicel of the median fork, and $\frac{1}{5}$th the length of R^3. Post radial plica strong, widely gaping; anterior basal cell linear, ill-defined, almost filled up by the thickened base of R^2 and the spur of R^5; cross-vein R to M faint: marginal area sphenoid with base oblique, and its costal border nearly straight, heavily fringed; beyond this the costal fringe is denser than that of the opposite margin, but shorter. Wing of a rich brownish black, with purple and greenish satiny gloss; some whitish bristling hair on the usual nervures in approximately the basal $\frac{1}{3}$ of the wing, and squamæ beneath on the membrane of the basal $\frac{1}{2}$. Nine small marginal spots, one at the end of every vein except *Sc* and *A*, formed of white linear scales laid

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lengthwise, are probably a generical feature; on each margin the two nearest to the base are slightly larger than the others. Legs brownish black with white markings:—a white gloss at the knee; a whitish gleam down the upper half of the tibia, and a white scale-spot on the exposed side of its tip; also a narrow oblique annulation, broadened on one side in the hind foot, at the apex of the 1st joint in the tarsus. The tibial bristles take a white gloss. Indumentum of the head and thorax in ♀ generally concolorous with the predominant tint of the wings; in ♂, parts take a white gloss, *e.g.* the sepia-black-brown palpi, the frontal scales and scales on the inner side of the basal joints of the antennæ; indumentum of the pronotum and in front of the wing-roots is also liable to a light gloss. Abdomen (in contrast with the scutellum and metanotum) smooth haired; the hairs long and silky, of the prevailing dark hue. Superior genital appendages in ♂ similar (viewed broad-side) to the upper part of a bird's head: protopodite longer than broad, rounded externally; exopodite produced obliquely along the articulation, falcate or subulate with decurved tip garnished with two minute, erect, preapical setulæ; endopodite wanting, unless present in the guise of an upper penis-cover composed of two strong oblique-pointed, acuminate spines, grooved longitudinally within, and extended laterally at the base, flanking a pair of short compressed subulate blades produced from the termination of the ductus ejaculatorius, subtended by a short, subacute, triangular lobe, (?) lower penis cover, that is not to be confounded with the obtusely sub-triangular terminal lobe projecting to the rear beyond the insertions of the inferior genital appendages.

Wings of ♀ ovate lanceolate: R^4 branching from R^2 midway between the axil of the sectorial fork and the fold of deflection; marginal area (subtended by R^1) narrower than the maximum breadth of the space between Cu^2 and the inner margin.

Loc. Seychelles. Mahé: Cascade Estate, about 800 feet, many examples, from windows of house, &c.; near Morne Blanc, about 800 feet. Silhouette: plateau of Mare aux Cochons, over 1000 feet, IX. 1908, 1 specimen. Also known from India; Matheran, W. Ghauts, Bombay, 800 m. (Biró, 8. VII. 1902: ex Mus. Nat. Hung., Budapest, by favour of Dr Kertesz). *Prep.*, Eaton, no. 44, *a—f*.

Panimerus, gen. nov. (Pl. 26, fig. 4).

Wings obovate—lanceolate, acute at R^5, the costa arcuate in a less degree than the opposite margin, and the endings of veins posterior to the apex rather wider apart than those of the radius and its branches in most cases: anterior basal cell extended beyond the fold of deflection; pedicel of the sectorial fork weakly attached to this cell, usually at some point interior to the cross-vein R to M, seldom subopposite thereto in individual flies (*cf. P. hirtus*; Prep. Eaton, no. 47, *d* and *k*): sectorial fork longer than the median, and extending inwards deeper than the middle of the wing, except in the Algerian species *P. nadorensis*, sp. nov. (Prep. Eaton, no. 51 *a*) which has these forks of almost equal length, reaching to about the wing's middle; cubital fork sessile; cross-veins somewhat vague; R^5 sometimes shortly prolonged into the basal cell. Wing-membrane nude; the nervures beneath, to a distance from the roots differing with the species, clad in ♂ flies with narrow-linear or linear-lanceolate distichous scales narrowed basally to a short

stalk; bristling hair rather capillareous; in ♀ as usual, the indumentum of the nervures is more hair-like throughout. Wing-markings chiefly dark hair-spots at the ends of nervures, not extended into the fringe; some dark hair, constituting either spots by the sectorial and median forks, or a transverse fascia thereabouts, skirted externally in most of the species with a narrow space of whitish-glossed outward spreading hair; also the ranks of bristling hair, whitish or opalescent, and in some instances a few additional dark hair-spots interspersed; fringes for some distance around the wing's apex light-glossed; dark elsewhere. Prothoracic air-tubes claviform, retained by the ♂, deciduous in the aged. Antennæ 16-jointed; ♂ 1st joint elongate claviform, subequal in length to the next three joints combined; 2nd joint densely squamate like the first, pyriform, or inversely triangular and truncate like the butt-end of a gun-stock, and ciliated along the outer edge with long acicular spinules contrasted in their light colour with the dark, obtuse scales, which spinules tend to be fasciculate distally; 3rd joint according to standpoint shortly fusiform-ovoid, fusiform-urceolate, or somewhat truncate-biconical, subequal in length to the fourth joint but with a shorter neck; 4th—14th joints lageniform with ovoid, not quite symmetrical bulbs, each with a small sensory pore on the more protuberant side above the zone of hair, and with a single pair of long setiform articular appendages (used perhaps for adjusting, from within, the whorl of hairs and for the alignment of joints) inserted close together beside the pore and reflected apart with a wide twisted curve towards the opposite side of the joint, slanting upwards; 15th joint either sub-globular, ovoid, or oblong, closely approximated to the apiculate bulbous 16th joint. In antennæ of ♀, long, dense, setaceous scales on one side of the 1st joint, that reach as far as the whorl of hairs of the 4th joint, serve as a check to the obovoid 2nd joint, which has no tuft of acicular spinules; 3rd joint asymmetrical, narrowly amphoroid or vase-shape with sloping shoulder and short neck, or fusiform urceolate. Protopodite in ♂ superior genital appendages stout, rounded externally; exopodite expanded at the articulation, unciform or falcate; endopodite (?) a long, curved, subulate spine. Inferior appendages short, little longer than the segment: tenacular spinules numerous if distributed along the whole length of the forceps-limb, but if subapical fewer and of graded lengths, the longest shorter than the limb. Ovipositor rostrate: subgenital plate in ♀ ending in a deep median sinus flanked by obtuse lobes.

Type *Panimerus hirtus* (Linn.) (*notabilis* Eaton), the only species previously described out of 4 Palearctic species and 1 species from the Seychelles, *sub manû*.

2. *Panimerus scotti*, sp. nov. ♀. (Pl. **26**, fig. 4.)

Wings dark ashen-grey with fringes of the same colour from the base to the end of R^1 on the costa, and to the hair-spot at the end of Cu^2 on the opposite margin; from thence to the apex with somewhat cupreous-, or dull gold-glossed fringes, "shot" with the aforesaid grey to a large extent; and on the disk with black hair-spots set off with white hairs, viz.:—(in addition to some ill-defined dark markings close to the wing-roots) a dark rounded spot in the depression near the cross-vein *Sc* to R^1; another at the end of this depression, between R^1 and the costa; 7 spots marking endings of ranks of bristling hair, set off with a few spreading white hairs externally (namely on the veins R^2, R^3, R^4,

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M^1, at the median fork, opposite the spot on R^2, Cu^1 and A); and at the margin of the disk 8 small spots of spreading hair at the ends of nervures preceded by some white hairs invaded by the coppery gloss of the fringe in the apical portion of the wing,—amounting altogether to 9 blackish spots or tufts on the disk and 8 clear of the fringe along the margin or 17 in all: R^1 and R^5 lacking the terminal dark spots. Abdomen and under parts of head and thorax blackish; its dense suberect dorsal hair frosted with white at the tips of the hairs when turned about. Pubescence of the upper parts of head and thorax whitish, or greyish-white with white-tipped hairs, according to standpoint; frons and palpi, from in front, greyish-brown or blackish. Antennæ brown; scape with impure whitish-glossed, light brown scales; hair of flagellum whitish-warm sepia grey, shifting to impure white with change of standpoint. Legs light brownish-grey shifting to blackish, and adorned with impure white scale-markings, viz.:—a small spot or narrow edging externally at the tibio-tarsal joining; a narrow apical annulation on the first tarsal joint (metatarsus); the 2nd joint wholly whitish; the last 3 joints black-scaled, more or less tinged with dull testaceous in certain aspects, and from other standpoints glossed throughout with whitish. Wing 2 mm. long.

Loc. Seychelles. Mahé: from near Morne Blanc, about 800 feet, 2 ♀. Félicité: XII. 1908, 1 ♀. ♂ unknown. *Prep.*, Eaton, no. 49 *a*, wing denuded.

Notiocharis, gen. nov. (Pl. 26, fig. 5 *a—f*).

Wings ovate-lanceolate, subacute apically between R^4 and R^5; cross-veins obsolescent; anterior basal cell vaguely indicated, about $\frac{1}{6}$th of the wing's length; pedicel of the sectorial fork nearly twice the length of the part of the stem between the sectors R^4 and R^5; cubital fork shortly petiolate; vein A short, and nearly straight.

Antennæ in ♂ (if not defective) 12-jointed; 1st joint elongate, somewhat triquetrous, on one side protuberant and scale-clad at the tip, longer than the third; 2nd joint ovoid, ample, shorter than the next, squamate; 3rd joint, subcylindrical, slender, equal in length to the 4th and 5th joints combined, and beset with crowded verticels of long curved spreading hair nearly throughout; the succeeding joints ovoid-fusiform with long subverticelate curved hairs spreading much in the same fashion as in *Panimerus* or *Clytocerus*; 12th joint Indian-club-shaped, approximated to the eleventh.

Genitalia imperfectly explored; inferior ♂ appendages subequal in length to their basis; tenacular setæ wiry and numerous; the longest nearly as long as the limbs.

3. *Notiocharis insignis*, sp. nov. (Pl. 26, fig. 5 *a—f*).

Wings with conspicuous hair-markings, in part black, blackish grey, light yellow and in part white; viz.:—a narrow basal band at the roots, impure whitish; a broad band extending from near the fold of deflection outwards to the end of R^1 on the costa and to that of Cu^1 on the inner margin, subtransverse basally, oblique apically, and widest posteriorly, occupying the greater part of the disk, and enclosing 3 small but conspicuous snow-white spots formed of depresso-convex scales lying lengthwise clear of the fringe, and placed at the wing-margin outside the ends of vein A and of the two cubital

veins on a darkened ground, black or blackish. The exterior edge of this dark band anteriorly defines the outer limits of 6 of the usual 8 series of dark horrescent hair; its posterior fringe, talcose-glossed, is reinforced by linear black scales about ½ the length of the long hairs of the fringe; and in the disk, anterior to the 1st cubital vein, the dark tint is somewhat lightened by an admixture of whitish hairs on the veins, so that from some standpoints the colouring appears to be light blackish grey. From the costa to R^5, or just beyond, the dark band is skirted by a narrow abbreviated stripe of spreading white hair, widened in the costal fringe. Apical remainder of the wing-veins clad with old gold or golden brown hair, glossed with gold, and with a few black hairs at the nearer parts of the radial sectors, and some of a dark colour that enter the costal fringe in the neighbourhood of R^2 and of R^4. Wing-fringe matching in colour the adjacent part of the disk, but liable to shift from glossy yellowish to whitish, with a talcose gloss.

Head and thorax light yellowish-testaceous, with pale flaxen pubescence; a cluster of minute narrow black scales on the meso-pleuron, and some on the prominent veins beneath the wings at the roots. Abdomen blackish brown, with somewhat harsh and partly erect dorsal hair,—part inclined over appressed elongate scales inserted towards the bases of segments. Genitalia and their hair in ♂ dull light-hempen brown. Antennæ concolorous with the head; when shifted about, some of the scales at the tip of the basal joint become blackish, and the flagellum towards the extremity, like the palpi, assumes a greyish or light brownish-grey tint. Legs glossy cream-coloured; broadly fuscescent-grey; at the tip of the tibia, and narrowly at the apex of the 1st tarsal joint on the exposed side in the hinder legs; and with the terminal joint black or black-brown. The long spreading hair-like tibial bristles, and some hairs on some of the tarsal joints shift with change of posture from flaxen to brownish and black. Wing 1·75 to 2 mm. long.

Loc. Seychelles. Mahé: near Morne Blanc, about 800 feet, 1 ♂. Mare aux Cochons district, about 1500 feet, I.—II. 1909, 5 ♂, 2 ♀. *Prep.*, Eaton, no. 61 *a*, *b*.

The specimens from the Mare aux Cochons district were caught (2. II. 1909) in a swampy place shaded by *Eugenia*-trees and great *Pandanus Hornei*, near a mountain-stream. They were flying near partly dried up pools among dead *Pandanus-leaves* (Scott).

PSYCHODA Latr. (1796), et auct.; restricted Eaton (1904).

Type *Psychoda alternata* Say. Out of 9 or 10 species *sub manû*, 3 have been described:—*Psychoda phalænoides* Latr., *P. alternata* Say, and *P. albipennis* Zett.—*Distribution*: Tropical and Temperate regions: 2 occur in the Seychelles.

4. *Psychoda alternata*, Say (1824).

Psychoda sexpunctata, Curtis (1839).

Loc. Seychelles. Mahé: Cascade Estate, about 800 feet, 11 examples (pinned). *Prep.*, Eaton, no. 70.

A species widely dispersed: N. America, Europe, Africa N. and S., India, New Guinea and Australia.

5. *Psychoda solitaria*, sp. nov. ? (Pl. **26**, fig. 6 *a—d*).

This is one of some doubtful species related closely to *Psychoda albipennis* Zett. in colour and structure (if indeed distinct) having ovate wings pointed at the end of R^5, an ill-defined anterior basal cell, the sectorial fork sometimes incomplete, the 1st joint in the antenna shorter than the next two combined, the 3rd joint equal in length to the 4th and like most of the joints in the flagellum lageniform with a rounded or napiform base and a subfiliform neck. Gonopods geniculate; protopodite subequal in length to the exopodite.

In *Psychoda albipennis* (Pl. **26**, fig. 7 *a—d*), joint no. 13 in the antenna is followed by two diminutive rudimentary joints; no. 14 visible only under a high power, is colourless, narrow and small; no. 15, sub-globular or ovoid and dark. Length of wing 0·9 to 1·8 mm.

Loc. Europe from Scandinavia to the Basses Pyrénées. *Prep.*, Eaton, no. 76.

Psychoda solitaria (Pl. **26**, fig. 6 *a—d*) appears to differ in having joint no. 14 of the antenna also sessile but terminal, and subglobular with an apiculus. The question of identification arises in connection with the possibility of this appearance being misleading. Length of wing 1·15 mm.

Loc. Seychelles. Mahé: Cascade Estate, about 800 feet, 33 specimens (carded). *Prep.*, Eaton, no. 76 A.

Philosepedon, Eaton (1904).

Differs from *Psychoda* in having no bristling hair on R^1; obtuse external ♀ genitalia, and the ovipositor being not rostrate. Appendages of ♂ inferior genitalia few tenaculate.

6. *Philosepedon humeralis* (Hoffmann); Meig.

A single ♀ fly agrees with the European insect.

Loc. Seychelles. Mahé: Cascade Estate, about 800 feet.

7. *Philosepedon triangulatus*, sp. nov.

Four flies, carded similarly to the preceding, and obtained at the same locality, differ from it in being darker in the wing-membrane (the hair is largely destroyed); and the ♂ apparently has 3-tenaculate (not 2-tenaculate) inferior genital appendages; the tenaculæ equal and divergent, otherwise similar to the corresponding parts in *Philosepedon humeralis*, so far as can be seen.

Loc. Seychelles. Mahé: Cascade Estate, about 800 feet.

Telmatoscopus, Eaton (1904).

As constituted hitherto, there are 14 species *sub manû* ranked in this genus, 12 of which have been described; but of some only one of the sexes is known. The terminal joint in the ♂ 16-jointed antenna is not relatively diminutive in comparison with its predecessors, and the 3rd joint equals the 4th in length. Wings ovate-lanceolate; pedicel of the sectorial fork inserted in or at the anterior basal cell. Tenacular spinules of the inferior genital appendages of ♂ numerous.

A few species have wings apically acute exactly at the end of R^5; the insertion of the pedicel of the sectorial fork in the basal cell quite as far from the cross-vein R to M as the cell's apical width; and 1st joint in the antenna of the ♂ shorter than the combined lengths of the 2nd and 3rd joints. *T. advena rothschildii* and *meridionalis*, Eaton (*cf.* Ent. M. Mag., January 1912). Preps. Eaton, nos. 94—96.

The remaining species have the wing's apex sub-acute or acute between the veins R^4 and R^5, or it is divided asymmetrically by R^5, the costal portion exceeding the lower. They can be roughly assorted thus:—

Axil of the sectorial fork nearer than that of the median fork to the base of the wing. *T. fraterculus* and *labeculosus*, Eaton. Preps. nos. 84 and 85.

Axils referred to equidistant from the base of the wing. *T. ustulatus*, Hal. MS., Walker (1859), *morulus* and *ambiguus*, Eaton. Preps. nos. 86—88.

Axil of the sectorial fork nearer than that of the median fork to the wing's apex. *T. soleatus*, Halid., Walk., *decipiens* and *consors*, Eaton. Preps. 91—93 and 3 species *sub manû* not named, including the one obtained at the island of Aldabra.

8. *Telmatoscopus fryeri*, sp. nov.

♀ (*dried*).—Wings of a somewhat light sepia-grey, with fringes to match, glossed with impure creamy-whitish at the apex from about the end of R^4 to that of M^1, and with black-hair markings on the disk, viz.:—4 small spots standing in an almost straight, slightly oblique line with one another at the ends of ranks of bristling hair, and a 5th at the end of the subcosta; of these the outermost (at the axil of the sectorial fork) stands very little farther from the wing-roots than the three others: and besides these, at the ends of the veins are small blackish spots of appressed spreading hair that do not contribute to the fringe; wing-margin outlined in black. Legs and nearly all of the left antenna deficient. Ovipositor pitch-brown. Length of wing 2 mm.

Loc. Aldabra, 1908—9 (Fryer): a single defective specimen was brought back by the Seychelles Expedition.

The seventh genus represented in the collection belongs to a different group, the **Group of Trichomyia and Sycorax**, which is outlined below.

Basal cells cuneate at the base; the anterior bounded in front for nearly half its length by the primary trunk of the radius R^1, and then deeply recessed,—a cross-vein linking to the trunk the common stem of the sectors and blending with the stem; R^4 suppressed. Wings obovate, rounded apically and widely at the end of R^5. Antennæ 15-jointed; 3rd joint longer than the scape or than the 4th joint; joints of the flagellum mostly filiform or pastiniform. Palpi short; the last joint firm.

This group contains 3 genera, one of which is represented in the Seychelles collection: they are as follows:

a. Anal vein long (3 long veins follow the median fork):

(i) *Eatonisca*, Meunier (1905), from Baltic amber; sectorial fork sessile upon the anterior basal cell.

(ii) *Trichomyia*, Halid., Curtis (1839), Walker (1856); sectorial fork stalked,

proboscis short, palpi shorter than the head. Type, *T. urbica*, Europe, the only species.

aa. Anal vein obsolete or reduced to an abbreviated rudiment that is not continued to the wing-margin (2 long veins follow the median fork).

(iii) *Sycorax* (see below).

Sycorax, Haliday; Curtis (1839); figured by Westwood in Walker, Ins. Brit. Dipt. (1856).

Sectorial fork stalked; proboscis short; palpi shorter than the head. Type, *Sycorax silacea* Halid., described: and 2 other species from Germany and Algeria, in addition to one below from the Seychelles, undescribed, *sub manu. Prep.*, Eaton, nos. 98—100. Name misapplied in America.

9. *Sycorax*, sp.

Two carded specimens, too defective for description.

Loc. Seychelles. Mahé: Cascade Estate, about 800 feet.

EXPLANATION OF PLATE 26.

Fig. 1. *Ulomyia fuliginosa* Meig., ♀ (Europe). Wing-neuration, for reference: *A*, anal vein; *Bc*, basal cells, the anterior (Bc^1) separated from the posterior (Bc^2) by the median vein; *C*, costa or anterior margin of wing; *Cu*, cubital veins, Cu^1 anterior or upper branch, Cu^2 posterior branch; M^1 and M^2, branches of the median vein enclosing the median fork; R^1, radius, and R^2 to R^5 its branches the radial sectors, of which R^2 and R^3 enclose the sectorial fork; *Sc*, subcosta. Cross-veins are cited by quoting the lettering of the veins they link together: *e.g.* the cross-vein *Sc* to R^1. Opposite this cross-vein a plait or fold in the wing-membrane, shown by a dotted line, often causes difficulty in ascertaining precisely the place of insertion in R^4 of the pedicel of the sectorial fork, without first denuding the wing thereabouts: and cross-veins are sometimes hardly visible, × 38.

Fig. 2. *Brunettia indica*, sp. nov., ♂: *a*, wing (denuded), × 50; *b*, antenna (denuded), × 110; *c*, halter; *d*, superior genital appendage, viewed laterally; *e*, inferior genital appendages, × 110.

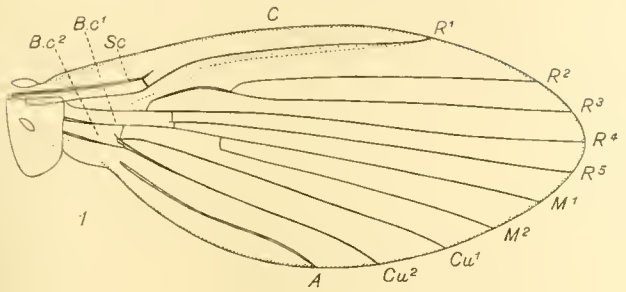
Fig. 3. *Brunettia indica*, sp. nov., ♀: *a*, antenna (denuded), × 110; *b*, palpi; *c*, anterior, and *d*, posterior leg, × 45; *e*, ovipositor; *f*, sub-genital plate, × 100.

Fig. 4. *Panimerus scotti*, gen. et sp. nov., ♀: wing, denuded but with the positions of the dark hair spots indicated, × 33.

Fig. 5. *Notiocharis insignis*, gen. et sp. nov., ♂: *a*, wing (denuded), × 45; *b*, antenna; *c*, anterior, and *d*, posterior leg (denuded), × 45; *e*, inferior genital appendage; *f*, tenacular spines of inferior genital appendage under pressure.

Fig. 6. *Psychoda solitaria*, sp. nov.?, ♂: *a*, antennal joints 1—4; *b*, antennal joints 11—14; *c*, gonopod; *d*, inferior genital appendage, × 110.

Fig. 7. *Psychoda albipennis* Zett., ♂, for comparison with *Psychoda solitaria*; *a*, antennal joints 1—4; *b*, antennal joints 11—15; *c*, gonopods and penis; *d*, inferior genital appendage, × 110.



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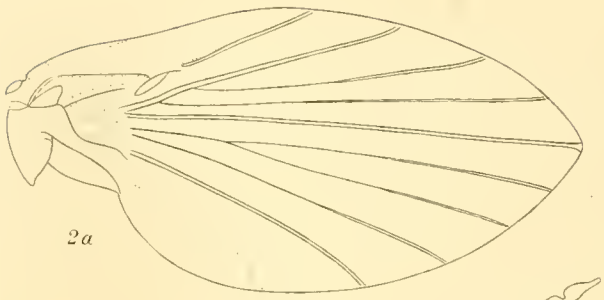
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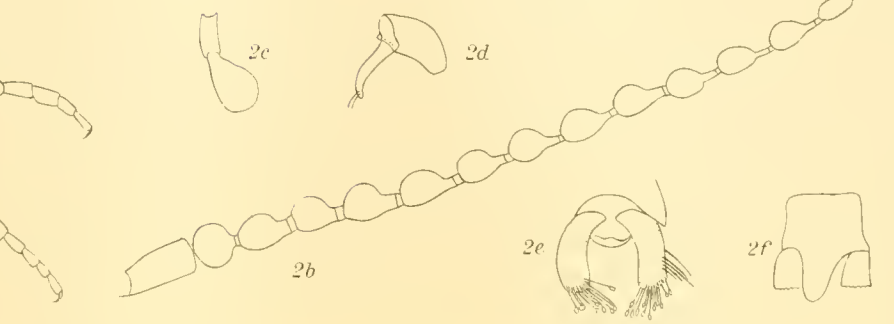
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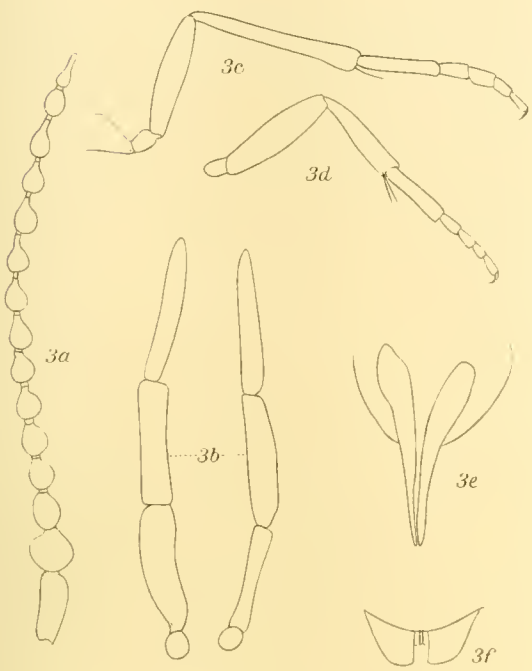
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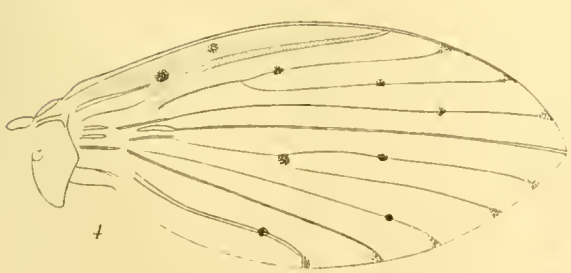
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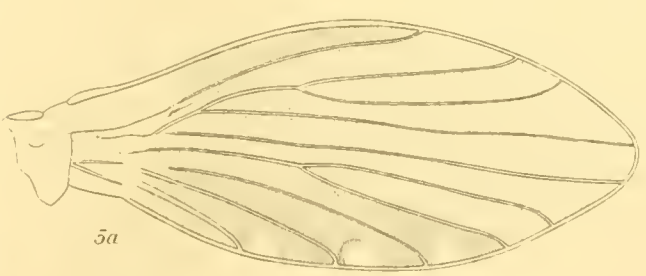
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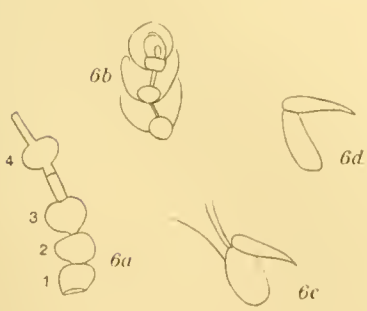
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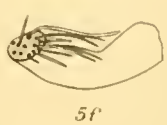
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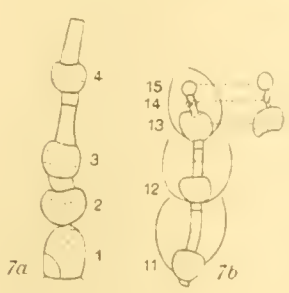
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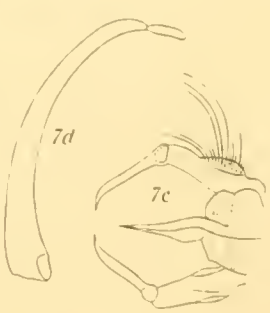
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A.E. Eaton del

DIPTERA, PSYCHODIDÆ.

No. XXVI.—EPHEMERIDÆ.

By the Rev. A. E. Eaton, M.A., F.E.S.

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

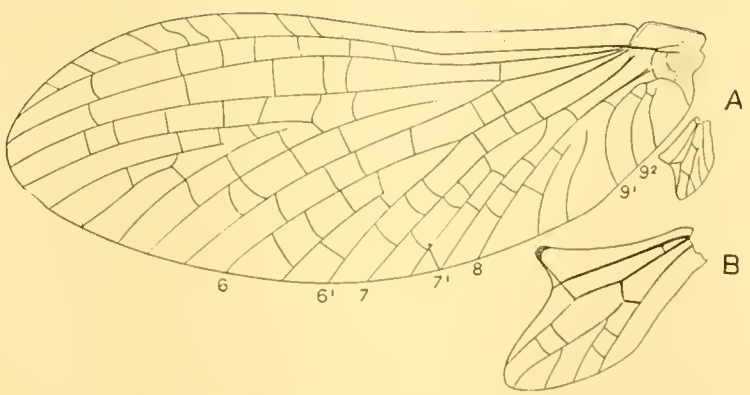
(1 Text-figure.)

Read 16th January, 1913.

A single species of this Family was obtained by the Seychelles Expedition. The genus *Hagenulus* represented by it was previously known from Cuba and the Tenasserim Valley (*cf.* Eaton, 1882 and 1892); but the habits of the flies were unrecorded.

Hagenulus Eaton, Ent. M. Mag., vol. xviii. 1882, p. 207; Revisional Monograph* of Recent Ephemeridæ, Trans. Linn. Soc. London, ser. 2 (Zool.), vol. iii. 1888, pp. 83, 113, Pl. 15, figs. 21 bis.

1. *Hagenulus scotti*, sp. nov.



A. Wings of *H. scotti*, ♀ im., not fully flattened out; the fore wing 4 mm. long. B. Hind wing more enlarged.

Subimago (*dried*). Wings light grey, the neuration subopaque or piceous, but nowhere dark-bordered.

Imago (*dried and carded*). Cross-veinlets about 9 or 10, simple and nearly straight, in the pterostigmatic portion of the marginal area, but evanescent or wanting before the

* In the "Analysis" at the end of this Monograph, on p. 313, it is stated that in *Hagenulus* "at the roots of the fore wing the 1st Axillar (9¹) meets the 2nd Axillar nervure." An examination of the wing of the Seychelles species shows that it would be more correct to say that the 1st Axillar meets *or almost meets* the 2nd Axillar nervure.

hulla; generally absent from the terminal margin; less numerous in the disk than in the type-species. Caudal setæ 3, equal, more than twice the length of the body. Costal projection of the hind wing subacute, roughened apically with minute setulæ. Thorax brown ochreous; the point of the scutellum may be of a bright yellow. Abdomen in segments 1—7 translucent white, outlined narrowly along the apical edges of the segments with black or piceous, the dark edging blending with a small triangular spot of the same colour on each side where tracheal branchiæ were inserted in the nymph; and sometimes a small dot is visible at the base of the segment on each side: segments 8—10 and the base of the forceps, also the caudal setæ white. Hinder legs white or whitish, with a black or fuscous spot (sometimes lacking) at the tip of the tibia, and two bands (or a submedian spot and an apical band) of a like colour on the femur: fore femur wholly, or only in its distal half, tinged with fuscous or bistre grey, not concealing the bands, and sometimes with a dark short streak at its base. Genitalia ♂ difficult of delineation from carded specimens; ♀ egg-valve produced and conspicuous as in *H. caligatus* Hag. MS., the type-species. Length of wing 4 and of setæ about 10 mm.

Twenty-nine carded specimens include 8 ♂ and 3 ♀ subim.; and 15 ♂, 3 ♀ im.

Loc. Seychelles. Mahé: near Morne Blanc, about 800 feet; Cascade Estate, 800 feet and over; Mare aux Cochons district, about 1500 feet. One of the specimens from near Morne Blanc was caught in the afternoon in a ravine (13. X. 1908); others, from the same locality, at sunset (10. XI. 1908) in a swampy hollow containing pools, long grass, wild palm-trees, &c. Some of the Cascade specimens were obtained in the morning (10. I. 1909) from dense undergrowth of fern, &c., in a shady valley filled with palm-forest (Scott).

No. XXVII.—ODONATA.

By Herbert Campion.

(Communicated by Prof. J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Read 16th January, 1913.

The Dragonflies collected by the first (1905) Percy Sladen Trust Expedition to the Indian Ocean, which I have had under review, were reported upon by Mr F. F. Laidlaw (Trans. Linn. Soc. London, ser. 2, Zool., xii. pp. 87—89, 1907), and his report included a statement of the literature which he had consulted.

The majority of the Odonata which form the subject of the present paper were obtained by Mr Hugh Scott in the Seychelles Archipelago during eight months ending in March, 1909. Simultaneously, Mr J. C. F. Fryer, who accompanied Mr Scott to the Indian Ocean, explored the island of Aldabra, and obtained *Pantala flavescens* Fabr., *Tramea basilaris* Pal. de Beauv., *Anax tristis* Hag., *Lestes ochraceus* Selys (*forma*), and *Ischnura senegalensis* Ramb. Mr H. P. Thomasset, in addition to taking an active part in the collecting in Mahé, presented a pair of *Lestes ochraceus* (*forma*) taken by himself in Cosmoledo in 1907. Finally, Mr R. P. Dupont, Curator of the Botanic Station in Mahé, also assisted Mr Scott during his visit to that island, and moreover made a collection in the island of Assumption in 1910, after the return of the Expedition to England. His collection consists of the following species:—*Diplacodes lefèbvrei* Ramb., *Philonomon luminans* Karsch, *Pantala flavescens* Fabr., *Rhyothemis semihyalina* Desj., *Tramea basilaris* Pal. de Beauv., and *Tramea limbata* Desj. (*forma*).

Although no species new to science were discovered, there has to be recorded a new and remarkable case of structural dimorphism affecting the ♀ of *Agriocnemis pygmaea* Selys (Synopsis). Beyond this, the female of *Gynacantha stylata* Martin has been found, and other interesting additions have been made to our knowledge of the forms inhabiting the islands. The occurrence of *Philonomon luminans* and of a representative of the Subfamily Lestinæ in those islands appears to be now recorded for the first time. Apparently, the only Dragonfly previously published from Aldabra was the almost cosmopolitan *Pantala flavescens*, and I believe that hitherto the Odonate-fauna of Assumption and Cosmoledo has remained entirely unknown.

I have much pleasure in acknowledging my indebtedness to two Continental experts, for kind assistance rendered by them in the preparation of this report. Dr F. Ris, of Rheinau, Switzerland, has obligingly given me the benefit of his unrivalled knowledge

of the Libellulinæ in connection with the less-known species falling into that Subfamily: he has also devoted much time to the study of the *Agriocnemis* from the Seychelles. Monsieur René Martin, of Paris, has been so good as to identify several other species belonging to a Dragonfly-fauna with which he is so well acquainted. His valuable paper on the "Odonates des Iles Séchelles" (Mém. Soc. Zool. France, ix. pp. 101—112 (1896)) has also been freely consulted. Moreover, frequent use has been made of the monographs by both these specialists which are appearing in the Selysian Catalogue ("Collections Selys").

The subjoined list enumerates not only the species collected in 1908—1910 in Seychelles, Assumption, Aldabra, and Cosmoledo, but also such additional species as I have found to be recorded elsewhere from the same islands. It may be added that Dr Philip P. Calvert mentions a male Dragonfly in the United States National Museum collection, from the Seychelles, collected by Dr W. L. Abbott, which may belong to *Agrion insulare* Selys (Proc. U. S. Nat. Mus., xviii. p. 142 (1895)). Notices of species not represented in the present collection are enclosed within brackets. No attempt has been made to state the full synonymy of the species discussed, but the original descriptions are always cited, and reference is also made to the Selysian Catalogue in all those cases where the present incomplete state of that great work has permitted of this being done.

Libellulidæ. Libellulinæ.

1. *Orthetrum stemmale wrighti* (Selys).

Libellula wrightii Selys, Ann. and Mag. Nat. Hist. (4), iii. p. 272 (1869).

Orthetrum stemmale wrighti Ris, Coll. Selys, Libell., fasc. x. p. 219 (1909).

Loc. Seychelles. Mahé: 5 ♂ (Dupont); 2 ♂, Cascade Estate; 3 ♂, Long Island, VII. 1908; 1 ♂, 1 ♀, taken *in coitu*, Port Glaud, 5. XI. 1908. Silhouette: 8 ♂, 4 ♀, plateau of Mare aux Cochons, IX. 1908. Bird Island: 1 ♀ (Fryer), VII. 1908. Dennis Island: 1 ♀ (Fryer), VIII. 1908. Praslin, 1905. Coetivy, 1905.

The younger males in the series closely resemble the females in the matter of coloration, but when full maturity has been attained the yellow markings on the face, thorax and abdomen are entirely obscured by blue pruinosity; even the yellow terminal appendages take on a bright purple colour. One or two aged females also tend to become pruinose. This is the Seychellean form of a species occurring on the Continent of Africa (*O. stemmale capense*), in Madagascar (*O. stemmale lemur*), and in Mauritius and Réunion (*O. stemmale stemmale*). De Selys (*op. cit.* p. 273) mentioned *wrighti* as occurring also in Mauritius, but Ris (*loc. cit.*) has referred this insect to the typical form, *O. stemmale stemmale.*

According to Mr Laidlaw's report, a long series of *O. wrighti* were obtained from the Chagos Archipelago by the Expedition of 1905. No specimens from that locality, however, are now discoverable in the collection, but the data which he quotes are found to apply to a certain number of specimens of *Diplacodes trivialis*, a species which Laidlaw failed to record at all from Chagos. So far as our knowledge goes, therefore the Seychelles Islands remain the sole habitat of *O. stemmale wrighti.*

2. *Diplacodes lefebvrei* (Ramb.).

Libellula lefebvrii Ramb., Ins. Névr., p. 112 (1842).

Libellula tetra Ramb., *op. cit.*, p. 119 (1842).

Diplacodes lefebvrei Ris, Coll. Selys, Libell., fasc. xii. p. 465 (1911).

Loc. Assumption Island: 1 ♂ (Dupont), 1910.

Rambur's *Libellula lefebvrii*, described from Egyptian females, and *Libellula tetra*, representing the Mauritian male, are considered by Dr Ris to be conspecific, and *tetra* becomes a mere synonym of *lefebvrii*. The species is recorded from numerous localities in Africa, and from Asia Minor, Arabia, Sokotra, Madagascar, Mauritius, and Réunion.

3. *Diplacodes trivialis* (Ramb.).

Libellula trivialis Ramb., Ins. Névr., p. 115 (1842).

Diplacodes trivialis Ris, Coll. Selys, Libell., fasc. xii. p. 468 (1911).

Loc. Seychelles. Mahé: 3 ♂, 1 ♀ (Dupont). Silhouette: 9 ♂, 6 ♀, plateau of Mare aux Cochons, IX. 1908; 1 ♀, Mont Pot-à-eau about 1500 feet, VIII. 1908. Praslin, 1905. Coetivy, 1905.

A common East-Indian species, known also from Suez and Queensland.

4. *Philonomon luminans* (Karsch).

Sympetrum luminans Karsch, Berl. Ent. Zeitschr., xxxviii. p. 22 (1893).

Philonomon luminans Ris, Coll. Selys, Libell., fasc. xiii. p. 697 (1911).

Loc. Assumption Island; 3 ♂ (Dupont), 1910.

A widely-distributed species in Africa; the British Museum possesses single specimens from Zanzibar and Abyssinia.

5. *Pseudomacromia luctifera* (Selys)*.

Zygonyx (?) *luctifera* Selys, Ann. and Mag. Nat. Hist. (4), iii. p. 273 (1869).

Schizonyx luctifera Karsch, Berl. Ent. Zeitschr., xxxiii. p. 281 (1890).

Loc. Seychelles. Mahé: 1 ♂, Morne Blanc, 800 feet, 1908; 1 ♀, Long Island, VII. 1908; 2 ♂ (Dupont). Praslin, 1905.

The following particulars are given in view of the variability of the species in respect that the triangle and subtriangle in the forewing may be either free or traversed:— In all the specimens the anterior triangles are free. In one male the subtriangle in the left forewing is 1-celled, becoming 2-celled, while in the right forewing it is 2-celled; in another male the subtriangle in both forewings is 2-celled, and in the remaining male and in the female it is 3-celled.

Various opinions have been held respecting the true systematic position of this endemic species, but Dr F. Ris informs me that he has now come to the conclusion that it should go into *Pseudomacromia*, an African genus already including two species from Madagascar which he considers to be the nearest allies of the insect before us. The British Museum possesses a pair (♂ and ♀) presented by Monsieur René Martin in 1900.

* See postscript, p. 446.

[6. *Zyxomma petiolatum* Ramb.

Zyxomma petiolatum Ramb., Ins. Névr., p. 30, pl. 2, fig. 4*d* (1842).

Zyxomma sechellarum Martin, Mém. Soc. Zool. France, ix. p. 103 (1896); Laidlaw, Trans. Linn. Soc. London, ser. 2, Zool., xii. p. 89 (1907).

Loc. Seychelles and Chagos Islands, 1905.

Not represented in the present collection.

Concerning this species Dr Ris has written to me as follows:—"I cannot find any appreciable difference between specimens from the Seychelles and a series from Borneo and another from Cape York which I possess. The differences are in size, which is variable, and in colour of wings, which is variable according to maturity." I may add that I had arrived independently at the conclusion that Martin's insect could not be separated specifically from Rambur's.]

7. *Tholymis tillarga* (Fabr.).

Libellula tillarga Fabr., Ent. Syst., Suppl., p. 285 (1798).

Loc. Seychelles. Mahé: 1 ♂ (Dupont). Praslin, 1905.

A common East-Indian species, recorded, *inter alia*, from Mauritius and Réunion.

8. *Pantala flavescens* (Fabr.).

Libellula flavescens Fabr., Ent. Syst., Suppl., p. 285 (1798).

Loc. Seychelles. Mahé: 2 ♂ (Dupont); 2 ♂, 1 ♀, Long Island, VII. 1908; Praslin, 1905. Aldabra: 10 ♂, 3 ♀ (Fryer). Assumption: 4 ♂, 8 ♀ (Dupont), 1910.

"In Aldabra this species began to be seen in December, beginning of wet season" (Fryer).

A Dragonfly of exceptionally wide distribution, occurring in all the warmer parts of the world, but not in Europe.

9. *Rhyothemis semihyalina* (Desj.).

Libellula semihyalina Desj., Rapport Soc. Maurice, i. (1832).

Loc. Seychelles. Mahé: 2 ♂, 8 ♀ (Dupont); Praslin, 1905; Coetivy, 1905. Assumption Island: 1 ♀ (Dupont), 1910.

A species described from Mauritius, and known also from various parts of Africa.

10. *Tramea basilaris* (Pal. de Beauv.).

Libellula basilaris Pal. de Beauv., Ins. Afr. Amér., p. 171, t. 2, f. 1 (1805).

Loc. Aldabra: 1 ♂ (Fryer). Assumption Island: 1 ♀ (Dupont), 1910.

This African species has been recorded from Madagascar and the Glorioso Islands, and the British Museum Collection contains specimens from Bechuanaland, Mashonaland, Natal, the Congo, and the Gold Coast. There are certain other specimens in the same collection, from Ceylon, which I consider should be referred to this species, rather than to the Indian form, *T. burmeisteri* Kirby.

MARINE BIOLOGICAL LABORATORY WOODS HOLE MASS.

11. *Tramea limbata* (Desj.), *forma*.

{*Libellula limbata* Desj., Rapport Soc. Maurice, i. (1832).
{*Libellula mauriciana* Ramb., Ins. Névr., p. 34 (1842).

Tramea limbata Calvert, Proc. U. S. Nat. Mus., xviii. p. 121 (1895); Ent. Nachr., xxii. p. 217 (1896).

Tramea continentalis Selys, Mitth. Mus. Dresd., iii. p. 299 (1878); Martin, Mém. Soc. Zool. France, ix. p. 102 (1896); Laidlaw, Trans. Linn. Soc. London, ser. 2, Zool., xii. p. 88 (1907).

Tramea madagascariensis Kirby, Trans. Zool. Soc. London, xii. p. 317 (1889).

Loc. Seychelles. Mahé: 4 ♂, 3 ♀ (Dupont). Silhouette: Mare aux Cochons, 1 ♂, 1 ♀, IX. 1908. Praslin, 1905. Coetivy, 1905. Assumption Island: 3 ♂, 1 ♀ (Dupont), 1910. Chagos Island, 1905.

Dr Ris has very kindly given me a very full statement of his views, not yet published, respecting *Tramea limbata* and the various geographical forms which it assumes. The species was originally described from Mauritius, and under the single specific name Dr Ris has gathered together numerous forms, usually regarded as distinct species, ranging from Dakar in Senegal on the West, to New Caledonia and Samoa on the East. Restricting ourselves to the area with which we are at present more directly concerned, it may be said that, while the particular specimens to which the names *continentalis* Selys (from Dakar) and *madagascariensis* Kirby (from Madagascar) were applied by their authors are themselves sufficiently distinct from each other and from typical *limbata*, nevertheless, specimens may be produced from both of these localities which closely resemble each other, and to that extent differ from the typical forms of their respective habitats. For this reason the use of the names *continentalis* and *madagascariensis* is attended with great difficulty, and it seems to be preferable, for the present at all events, to designate as *T. limbata* (*forma*) any specimen falling within the limits of variation of the species, but not agreeing exactly with the typical form from Mauritius.

Viewing as a whole the series obtained by the two Percy Sladen Trust Expeditions, we see how variable the species is in respect of the size and form of the reddish-brown basal spot on the hind wings. Thus, in the three males from Assumption Island (1910) the basal spot is bounded externally by an almost straight line drawn downwards from the cubito-anal cross-vein. Some of the Seychelles males are similar to these, but in others the basal patch extends a little further outwards, while in two males from the Chagos Archipelago (1905) the spot is very nearly as full as it is in typical *limbata* from Mauritius. There is also variation in respect that the spot may either continue to the hind margin of the wing or else curve inwards at some point before the margin is reached.

In the females the spot is not less variable. In at least one of them (that from Silhouette) it encloses a large hyaline space and is decidedly convex outside. It is interesting to note how nearly some of the females approximate towards the specimen from Madagascar which Mr W. F. Kirby presumed to be the female of his *madagascariensis*. In addition to variability in this respect, one of the females, from Mahé, has 8 antenodal cross-veins in each hind wing, instead of the normal number of 7.

Corduliinæ.

[12. *Hemicordulia similis* (Ramb.).

Cordulia similis Ramb., Ins. Névr., p. 147 (1842).

Hemicordulia delicata Martin, Mém. Soc. Zool. France, ix. p. 105 (1896).

Hemicordulia similis Martin, Coll. Selys, Cord., fasc. xvii. p. 14 (1906).

Not represented in the collection.

Hemicordulia includes several generalised members of the Subfamily, found in the Oriental, Australasian, and Oceanic regions; but, although it is represented in Madagascar by two species, one of them being *H. similis*, it is not known to occur on the Continent of Africa.]

Æschnidæ. Æschninæ.

13. *Anax tristis* Hag.

Anax tristis Hag., Verh. zool.-bot. Ges. Wien, xvii. p. 35 (1867); Ris, Ann. Soc. Ent. Belg., lv. p. 320 (1911).

Anax goliath Selys, Rev. Zool., xxiii. p. 178 (1872); Martin, Coll. Selys, Aesch., fasc. xviii. p. 15 (1908).

Loc. Aldabra: 1 ♀, Basin Cabri, Picard Island (Fryer).

This huge Dragonfly, to which Ris (*loc. cit.*) has lately restored the name *tristis*, is widely spread over the Continent of Africa, and occurs also in Madagascar.

14. *Anax guttatus* (Burm.).

Aeschna guttata Burm., Handb. Ent., ii. p. 840, n. 14 (1839).

Anax guttatus Martin, Coll. Selys, Aesch., fasc. xviii. p. 23 (1908).

Loc. Seychelles. Mahé: 4 ♂ (Dupont).

A species widely distributed in the Oriental Region, and occurring also in Queensland, but not recorded from Continental Africa.

15. *Hemianax ephippiger* (Burm.).

Aeschna ephippigera Burm., Handb. Ent., ii. p. 840, n. 15 (1839).

Hemianax ephippiger Martin, Coll. Selys, Aesch., fasc. xviii. p. 28 (1908).

Loc. Seychelles. Mahé: 1 ♀, Cascade Estate.

Common both in Africa and Asia.

16. *Gynacantha stylata* Martin.

Gynacantha stylata Martin, Mém. Soc. Zool. France, ix. p. 106 (1896); Coll. Selys, Aesch., fasc. xx. p. 181 (1909).

Loc. Seychelles. Silhouette: 1 ♀, Mont Pot-à-eau, about 1500 feet, VIII. 1908; 1 ♀, Mare aux Cochons, IX. 1908.

The specimen taken in August had evidently been ovipositing, for the ventral surface of the terminal segments is coated with brown mud.

Gynacantha is one of the dominant genera of Aeschninæ, and has numerous representatives in Africa, Asia, and America. *G. stylata* was described from a unique ♂ from Mahé, preserved in M. Martin's collection, and has been stated by that author to resemble *G. bispina* Ramb., a species occurring in Mauritius, Madagascar, and Africa. The following particulars of the ♀, which hitherto has been unknown, can now be given :— Total length 68·5 mm. Length of abdomen, including anal appendages, 54·5 to 57 mm. Coloration of head, thorax, pterostigmata, and legs as in male. Wings faintly tinged with yellow at the base as far as the triangle ; the yellow fills the costal and subcostal spaces before the nodus, and extends along the costa until the pterostigma is reached. Pterostigma 4·5 mm. in length, surmounting from 4 to 5 cells. Reticulation reddish-brown ; membrane with copperish glint. The branch of the radial sector departing before the level of the pterostigma brace-vein. Two cells in subtriangle. Forewing 47 mm. long, and with 22 to 25 antenodal and 18 to 19 postnodal cross-veins. 5 to 8 cells in triangle. Hindwing 46 mm. long; 16 to 18 antenodals and 20 to 22 postnodals. Five cells in triangle. Anal loop with 11 cells (August specimen) or 12 cells (September specimen); supplemental anal loop 5-celled, 6-celled or 7-celled.

Abdomen reddish-brown, with the greenish coloration of the thorax reappearing upon parts of segments 1, 2, and 3. Segment 9 carrying below a pair of apical two-jointed filaments. Segment 10 ending above in an obtuse point ; produced below into a tongue directed backwards and downwards, presenting a glossy-black, triangular, concave surface dorsally, and terminating with a pair of long, curved, glossy-black spines, forming a fork. Anal appendages 6·5 mm. long (about the length of segments 8, 9, and 10 taken together), flat, narrow, lanceolate, clothed with short hairs, reddish-brown. Ovipositor-spine reddish, very smooth and glossy, curving upwards towards the end of the abdomen, which its length about reaches, thin, and sharply pointed.

The specimen obtained in September, which may be taken as the type of the ♀, has been placed in the British Museum.

Agrionidæ. Lestinæ.

17. *Lestes ochraceus* Selys (Synopsis) (*forma*)*.

Lestes ochracea Selys (Synopsis), Bull. Acad. Belg. (2), xiii. p. 325 (1862).

Loc. Aldabra : 8 ♂, "found round pools in rocks at all seasons" (Fryer). Cosmoledo : 1 ♂, 1 ♀, 1907 (Thomasset).

For the identification of this species I am indebted to Monsieur René Martin, who says, however, that he finds some differences between the specimens submitted to him and those which he considers to represent true *ochraceus*. He adds that there are, in Africa, several closely-allied species falling into the *ochraceus* group.

Lestes ochraceus was described by De Selys from the male sex alone, the habitat being given as Africa, probably the Cape of Good Hope. The terminal segments of the abdomen were unknown to De Selys.

* See postscript, p. 446.

I think it advisable to give the following brief particulars of the present insect, in view of the many respects in which it differs from the one described by De Selys:—

♂. Length of abdomen, including anal appendages, 34·5 mm. Hindwing 21·5 mm. in length, with 10 (occasionally 11) postnodal cross nervures. Colour characters rather variable. Labium yellowish. Labrum greenish-grey. Vertex chocolate. Ocelli garnet colour. Pronotum mostly yellowish. Dorsum of meso- and meta-thorax chocolate-brown, with a variable amount of greenish-yellow. Sides and lower surface of thorax yellowish, with a pair of black rounded spots on the pectus. Femora of forelegs yellowish, bordered with black; tibiæ with a median black line on the upper surface. Mid- and hindlegs yellowish, not lined with black. Tarsi of all legs partly black; claws and spines black. Wings hyaline; reticulation reddish-brown; pterostigmata dark chocolate-brown, covering two cells. Abdomen generally glossy dark brown; segments 1, 2, and 10 partly yellowish; 3, 4, 5, and 6 with blackish markings near the apex; 7 largely, and 8 and 9 wholly, blackish; 8 with numerous dark denticulations on the apical margin. Upper anal appendages yellow, blackish at the tips, the inner margin with a large sharp tooth above and two smaller blunt teeth below; several minute blackish denticulations on the outer margin; lower appendages blackish above, about a third of the length of the upper.

♀. Length of abdomen 32·5, of hindwing 21·5 mm. Postnodals 11 (in 3 wings) to 12 (left forewing). The single ♀ in the collection (from Cosmoledo) appears to be an aged individual, inasmuch as the wings are decidedly smoky, as well as considerably frayed. The insect generally is darker than the ♂, the whole of the face, head, and abdomen being of a uniform blackish brown. A lighter colour, however, is observable in portions of the thorax, and the legs are of a warm brown. The anal appendages, which are coloured like the abdomen, are a little shorter than the 10th segment.

Agrioninæ.

18. *Allolestes maclachlani* Selys.

Allolestes M'Lachlani Selys, Ann. and Mag. Nat. Hist. (4), iii. p. 275 (1869).

Loc. Seychelles. Mahé: 1 ♂ (immature), Morne Seychellois, over 1500 feet, 4. II. 1909; 1 ♀, Cascade Estate, about 800 feet; 1 ♀, from near Morne Blanc. Silhouette: 1 ♀ (immature), Pointe Étienne, low cultivated country, IX. 1908. Praslin, 1905.

19. *Allolestes nigra* Martin.

Allolestes nigra Martin, Mém. Soc. Zool. France, ix. p. 107 (1896).

Loc. Seychelles. Silhouette: 1 ♂ (mature), Mare aux Cochons, IX. 1908.

The genus *Allolestes* has Oriental affinities and is confined to the Seychelles, and the two known species are extremely rare in collections. They are included among the remarkable Agrionine forms having long pterostigmata, and sectors interpolated between the principal veins of the wings, as in the true Lestinæ.

20. *Leptocnemis* (=*Hemicnemis*) *bilineata* (Selys).

Trichocnemis bilineata Selys, Ann. and Mag. Nat. Hist. (4), iii. p. 276 (1869).

Loc. Seychelles. Mahé: 8 ♂, 2 ♀, from near Morne Blanc; 2 ♂, Cascade Estate; 1 ♂

(Dupont). Silhouette: 4 ♂, Mare aux Cochons, IX. 1908; 1 ♂, Pointe Étienne, low cultivated country, IX. 1908. Praslin, 1905.

[21. *Leptocnemis* (=*Hemicnemis*) *cyanops* (Selys).

Trichocnemis cyanops Selys, Ann. and Mag. Nat. Hist. (4), iii. p. 275 (1869).

This species was described by Baron E. de Selys-Longchamps from a male, or males, taken in the Seychelles by Prof. E. Perceval Wright, but it does not appear to have been re-discovered by later investigators.

Through the courtesy of Mr H. M'Lachlan, I have had an opportunity of examining the type ♂, the sole representative of the species, contained in the late Mr R. M'Lachlan's collection. Upon comparing it with the type of *L. bilineata*, preserved in the same collection, and also with specimens taken by the Expeditions of 1905 and 1908—9, I failed to discover in it any distinctive characters such as would enable me to refer other specimens to the same species with any degree of certainty.

M. René Martin says of this insect:—"Spéciale aux Séchelles, où elle doit être rare. Peut-être *H. cyanops* n'est-il pas une espèce différente de *H. bilineata*. On trouve des individus du *bilineata* qui ont, mélangés, les caractères assignés par M. de Selys à chacune des espèces" (Mem. Soc. Zool. France, ix. p. 109 (1896)).]

22. *Ceriagrion glabrum* (Burm.).

Agrion glabrum Burm., Handb. Ent., ii. p. 821, n. 18 (1839).

Loc. Seychelles. Silhouette: 6 ♂, 3 ♀, Mare aux Cochons, IX. 1908; 4 ♂, 1 ♀, Pointe Étienne, low cultivated country, IX. 1908. Praslin, 1905.

I have seen this pretty brick-red Dragonfly from Madagascar, Sokotra, and from numerous localities in Continental Africa.

23. *Ischnura senegalensis* (Ramb.).

Agrion senegalense Ramb., Ins. Névr., p. 276 (1842).

Loc. Aldabra: 1 ♀ (Fryer).

Widely distributed in the tropical parts of Africa and Asia, and recorded also from the Seychelles.

24. *Agriocnemis pygmæa* Selys (Synopsis).

Agriocnemis pygmæa Selys (Synopsis), Bull. Acad. Belg. (2), xliii. p. 146 (1877).

Agriocnemis exilis Martin, Mém. Soc. Zool. France, ix. p. 110 (1896); Laidlaw, Trans. Linn. Soc. London, ser. 2, Zool., xii. p. 89 (1907) (*nec* Selys (Synopsis)).

Loc. Seychelles. Mahé: 1 ♂, 1 ♀, marshes on coastal plain at Anse aux Pins and Anse Royale, I. 1909. Silhouette: 14 ♂, 15 ♀, Pointe Étienne, low cultivated country, IX. 1908; 1 ♂, Mare aux Cochons, IX. 1908. Praslin, 1905. Coetivy, 1905.

Dr Ris, who has specially studied the genus, has been good enough to examine the whole of the *Agriocnemis* material brought from the Seychelles by the Expeditions of 1905 and 1908—9. He finds that *A. exilis*, the species to which Mr Laidlaw referred the specimens obtained in 1905, is not represented at all. The males are rather large, but

all of them belong undoubtedly to *A. pygmæa*, as defined in the Selys-Synopsis. In that species the male is characterised especially by the very peculiar shape of the inferior anal appendages, and in that respect our specimens agree perfectly with a series from Colombo, Ceylon, which Dr Ris has examined, and also with odd specimens from Australia. The prothoracic lobe is very much the same in all the males which he has studied.

The distinguishing feature of the typical *pygmæa* female is the form of the hind margin of the prothorax. This form is unique in the genus, the margin being without a backward prolongation or lobe, almost straight, and with two very minute and very laterally-placed tubercles, a condition entirely different from that found in the corresponding male. This form of the female Dr Ris has seen from Ceylon, Java, Queensland, and Sydney.

In addition to the regular males and females just considered, the Percy Sladen Trust Collections contain a certain number of females which belong to an unknown form. These females are characterised by the pronotum having a thin, elevated, quadrangular, and very slightly emarginated median lobe, whereas the normal females are devoid of any lobe whatever. At first sight, it seemed as if we were dealing here with a distinct species, but, owing chiefly to the absence of any males which could be referred to a second species, Dr Ris is now practically certain that these females represent a very curious and interesting case of structural dimorphism. Structural dimorphism in the same sex, as distinguished from colour dimorphism, is of rare occurrence in Dragonflies, but Dr Ris has drawn my attention to another instance afforded by the Mediterranean Aeschnine *Boyeria irene* Fonsc., in the female of which the terminal appendages may be either long or short. Furthermore, in his newly-published monograph of "The North American Dragonflies of the Genus Aeshna," Dr E. M. Walker figures variations in the length and depth of abdominal segments 1—4, as well as variations in the length of the anal appendages, in the females of certain North American species of that genus.

In *Agriocnemis*, as in the closely-allied genus *Ischnura*, the females are subject to rufous dimorphism, and the present species affords no exception to the rule. In the Seychellean females, therefore, we get two distinct morphological forms, and two colour phases of each form. The matter may be tabulated thus :—

Hind-margin of prothorax not lobed (*forma typica*)	Ground-colour of body green,	♀*a*
	Ground-colour of body orange,	♀*b*
Hind-margin of prothorax distinctly lobed (*forma nova*)	Ground-colour of body green,	♀*c*
	Ground-colour of body orange,	♀*d*

The four females from Coetivy (1905) are all of the orange, lobed form (♀*d*). The 16 females from Mahé and Silhouette (1908—9) can be grouped in this way :—

2 specimens	♀*a*	Non-lobed
2 ,,	♀*b*	Non-lobed
3 ,,	♀*c*	Lobed
8 ,,	♀*d*	Lobed
1 specimen of uncertain coloration		Lobed

The 16 lobed females, therefore, represent as much as 80 °/₀ of the total number of females collected (20).

The ♀♀ *b* and *d* are alike in coloration; and, so far as can be judged from the material which is available, there are also no colour differences between ♀*a* and ♀*c*.

The synonymy of this species is in an unsettled state, and the identity of Rambur's *pygmæa* (1842) is very uncertain. It has therefore been deemed advisable, for the purposes of this paper, to designate the Seychellean insect as the *pygmæa* of the Selys-Synopsis, where there is a very good description, indicating the structural characters of both sexes.

The distribution of *pygmæa* is astonishingly wide, extending as it does from the Seychelles on the West to Australia on the East: such a distribution, unaccompanied by local modification in different parts of the range, suggests recent and rapid dispersal of the species.

25. *Teinobasis alluaudi* (Martin).

Telebasis alluaudi Martin, Mém. Soc. Zool. France, ix. p. 110 (1896).

Loc. Seychelles. Silhouette: 1 ♂, Mare aux Cochons, IX. 1908; 1 ♂, Pointe Étienne, low cultivated country, IX. 1908. Mahé: 2 ♂, Mare aux Cochons district, about 1500 feet, I.—II. 1909.

Monsieur René Martin makes the following observations respecting this species (*op. cit.* p. 111):—"Paraît assez commun à l'île Mahé, où le R. P. Philibert a pris un certain nombre de mâles et de femelles. Cette espèce, qui n'a jamais été observée qu'à Mahé, est la seule *Telebasis* qui ne soit pas de l'Asie tropicale et de l'Océanie. Toutes les autres *Telebasis* habitent les Philippines, les Moluques, Célèbes, la Nouvelle-Guinée, Singapore. Les espèces les plus voisines de *T. alluaudi* sont la *T. lorquini* des Moluques, et la *T. rufithorax* de l'île d'Obi." It will be observed that the present collection contains specimens from Silhouette as well as from Mahé. It also appears that the species is now known from Madagascar, for the British Museum possesses a female from the East of that island, presented by M. Martin in 1899.

I follow Mr W. F. Kirby in retaining the term *Telebasis* for the New World genus which De Selys renamed *Erythragrion*; and for the Oriental genus to which the species under consideration belongs I adopt the name of *Teinobasis* which Mr Kirby has proposed for it. This course has been taken, in dealing with American Dragonflies, by Prof. P. P. Calvert and Mr R. A. Muttkowsky, and the reasons for doing so appear to be adequate.

GENERAL CONCLUSIONS.

The collection from the coral island of Assumption might have been made on the mainland of Africa without occasioning any surprise, as it consists entirely of Libellulinæ belonging to Ethiopian species. The few Dragonflies from Aldabra, another coral atoll, might also have been obtained in Africa.

When we come to the granitic islands constituting the Seychelles Archipelago, however, we find the number of purely African species reduced to two, viz. *Rhyothemis semihyalina* and *Ceriagrion glabrum*. Three others are common to the Ethiopian and Oriental regions: these are *Trameа limbata*, *Hemianax ephippiger*, and *Ischnura senegalensis*. The single Corduliine, at one time thought to be peculiar, is now considered to be

conspecific with the Madagascar *Hemicordulia similis*. *Teinobasis alluaudi* is another species which is common to Madagascar and the Seychelles. The forms which are really peculiar to the Archipelago are *Orthetrum stemmale wrighti*, *Pseudomacromia luctifera*, *Gynacantha stylata*, *Allolestes maclachlani*, *Allolestes nigra*, and *Leptocnemis bilineata*. *Pantala flavescens* belongs to no particular zoogeographical region. The remaining species appertain to the Oriental fauna, and are as follows:—*Diplacodes trivialis*, *Zyxomma petiolatum*, *Tholymis tillarga*, *Anax guttatus*, and *Agriocnemis pygmæa*. An analysis of the indigenous species and subspecies reveals the interesting fact that the three Anisoptera—*Orthetrum stemmale wrighti*, *Pseudomacromia luctifera*, and *Gynacantha stylata*—are allied to forms found in Africa or Madagascar, while the three Zygoptera—*Allolestes maclachlani*, *A. nigra*, and *Leptocnemis bilineata*—have affinities with Asiatic forms.

It may be taken that the Odonate-fauna of the Seychelles is now fairly well known, and the apparent deficiencies in it are quite remarkable. For instance, notwithstanding decided relation with the Oriental region, there is no representative of the characteristic Asiatic genus *Neurothemis* (Libellulinæ). The Libelluline genera *Palpopleura*, *Crocothemis*, *Brachythemis*, and *Trithemis* are also unrepresented, although they occur quite commonly both in Asia and Africa. Furthermore, it is worthy of remark that the important Subfamilies Calopteryginæ and Gomphinæ have never been met with.

The presence of larval water-mites (Hydrachnidæ) is a very noticeable feature of some of the specimens of *Tramea limbata* from the Seychelles, and also of the *Tramea basilaris* from Aldabra. In some instances the thorax carries only two or three of the large ruddy mites, while in other cases the sides and under surface of the thorax are thickly encrusted with them. It would appear that these Arachnids are not met with at all commonly upon the bodies of Anisopterous Dragonflies, and one of the few other cases of the kind which have come under my notice concerns an Australian *Tramea*. *Sympetrum meridionale* Selys furnishes a notorious instance of larval water-mites clustering in great numbers on the wings of an Anisopterous species, and Mr K. J. Morton possesses a specimen from Asia Minor whose wings bear not less than 220 of these curious little creatures. Among the Zygoptera from the Seychelles, at least one specimen of *Agriocnemis pygmæa* has mites on the sternum. The nature of the relation subsisting between Acari and their Dragonfly hosts is not at present well understood. (See on this subject Berlese, Gli Insetti, vol. ii. pp. 13 and 26.)

POSTSCRIPT.

Since the foregoing was written (June, 1912), I have seen several recent papers by Dr Ris bearing more or less directly upon the species discussed, but unfortunately it has not been found possible to insert references to them.

One of these publications is fasc. xiv. of the Selysian Catalogue, which includes Dr Ris' revision of *Pseudomacromia*. The Seychellean Dragonfly originally described as *Zygonyx luctifera*, and formerly believed to have affinities with certain Asiatic forms, is now definitely referred to the African genus *Pseudomacromia*, as foreshadowed in the present paper.

Again, the ♂ anal appendages of the species designated herein as *Lestes ochraceus* (*forma*) are very similar to those figured by Dr Ris for *Lestes unicolor*, M'Lach., from the River Nile (Gondokoro) and from Madagascar (Sitzungs. Akad. Wissen. Wien., Mathem.-naturw., cxxi., p. 153 (1912)). In connection with the preparation of my report I compared the type ♂ of *L. unicolor* with other males from the Percy Sladen Trust Collection, and I made a note at the time of this similarity in the matter of the anal appendages, in addition to other points of agreement between the insects compared. I also found a still closer agreement between the type ♀ of *L. unicolor* and the ♀ from Cosmoledo. Nevertheless, in view of certain differences which I discovered and to which I attached some importance, I felt disinclined to identify the series from Aldabra and Cosmoledo with M'Lachlan's types from Madagascar.

24 *January*, 1913. H. C.

No. XXVIII.—LES CARIDINES DES SEYCHELLES.

Par le professeur Eugène L. Bouvier, F.M.L.S.

(Communiqué par le professeur J. Stanley Gardiner, M.A., F.R.S., F.L.S.)

Planches 27—29.

Lu le 16 janvier 1913.

Dans son étude sur les "Land and Freshwater Decapoda" recueillis sous la direction de M. Stanley Gardiner au cours de la "Percy Sladen Trust Expedition," M. L. A. Borradaile (*1907*, 67) signale aux Seychelles deux espèces de Caridines plutôt rares, *Caridina nilotica* Roux, ? *C. multidentata* Stimpson, et quatre fort communes, les *C. typus* Edw., *similis* Bouvier, *brevirostris* Stimpson, *singhalensis* Ortmann. "La collection, écrit-il, contient un nombre immense d'individus appartenant à ces espèces (les quatre dernières) qu'il est extrêmement difficile de séparer les unes des autres à cause des grandes variations qu'elles présentent sur tous les points dont Bouvier se sert pour leur diagnose. Je considère comme probable que la distinction de ces espèces ne sera pas maintenue dans tous les cas. M. Stanley Gardiner serait heureux d'envoyer les spécimens à quiconque voudrait prendre à tâche de les examiner pour en faire la statistique."

Etant donnés ce passage et les travaux que je consacre depuis près de dix ans à la famille atyienne, j'étais en droit de regarder comme personnelle l'invitation précédente. J'y répondis avec d'autant plus de satisfaction que la variabilité des Caridines semble hautement suggestive, et que je désirais particulièrement l'étudier sur les espèces des Seychelles. Voilà comment j'ai pu, grâce à l'intermédiaire de M. Borradaile, recevoir de M. Stanley Gardiner les très nombreuses Caridines de la "Percy Sladen Trust Expedition" et réunir les matériaux scientifiques du présent mémoire.

Ce travail a été long et pénible, car j'ai dû examiner par le menu et à plusieurs reprises tous les exemplaires de la collection qui en renferme 3000 à 4000. Mais je ne regrette pas de l'avoir entrepris, car il comporte deux résultats principaux qui paraîtront sans doute de réelle importance: une refonte complète de la classification des Caridines et des notions précises sur l'origine des mutations évolutives dans la famille des Atyidés. Je remercie M. Borradaile et M. Stanley Gardiner pour leur aimable obligeance et pour le plaisir qu'ils m'ont procuré en me permettant de mettre en lumière des notions scientifiques de quelque valeur.

M. Borradaile n'avait pas exagéré en disant que les Caridines soumises à son examen présentent une variabilité extrême et que cette variabilité aurait vraisemblablement pour conséquence de faire passer en synonymie plusieurs espèces jusqu'alors admises. En fait, les Caridines seychelloises sont pour la plupart tout à fait stables, mais l'une d'elles varie à un tel degré et suivant des voies si diverses qu'on doit y rattacher plusieurs espèces considérées jusqu'ici comme indépendantes, et qu'il faut regarder cette Caridine elle-même comme une espèce en pleine période évolutive.

L'espèce à laquelle je fais allusion me paraît devoir être rapportée à la *Caridina brevirostris* Stimpson. L'identification reste douteuse car le type de Stimpson a été perdu et la diagnose qu'en a donnée l'auteur présente des lacunes regrettables ; mais cette diagnose répond de tous points à l'espèce que j'ai décrite antérieurement sous le nom de *C. brevirostris* et qui provenait également des Seychelles.

La *C. brevirostris* est représentée par plus de 3000 spécimens dans la collection de M. Gardiner dont elle forme la majeure partie : j'ai pu l'étudier dans tous ses détails et en suivre les innombrables variations. C'est à l'examen de ces dernières que sera consacrée la première partie du présent mémoire ; j'exposerai ensuite les conclusions que l'on peut tirer de cette étude et je terminerai par une revue rapide des diverses espèces comprises dans la collection.

Les variations de la *Caridina brevirostris*.

La variabilité de la *C. brevirostris* s'affirme dans toutes les parties du corps, presque sans exception, mais comme elle atteint son amplitude maximum dans le rostre et dans les chélipèdes, c'est là tout d'abord qu'il convient de l'étudier.

Variations du rostre. Comme on le sait depuis longtemps, les Caridines les plus primitives sont toutes armées d'un très-long rostre qui se relève à la pointe et affecte la forme d'un sabre latéralement caréné, muni en dessus d'une rangée de spinules, et en dessous d'un certain nombre de denticulations.

Dans les exemplaires de notre espèce qui se rapprochent le plus de ce type, le rostre (Pl. **27**, fig. 2) présente une structure semblable ; il atteint ou dépasse légèrement l'extrémité distale des pédoncules antennulaires, mais ne se prolonge pas en une longue pointe et reste droit où se relève à peine dans sa partie terminale. Examiné dorsalement, il montre une base large, puis devient assez brusquement beaucoup plus étroit ; sur les flancs, il est parcouru de chaque côté par une carène latérale qui se continue en arrière avec le bord orbitaire et divise longitudinalement l'organe en deux carènes beaucoup plus fortes : la carène dorsale qui est spinuleuse, la carène ventrale qui est denticulée.

On peut partir de ce type primitif pour suivre les innombrables variations du rostre, et les grouper autour de trois types essentiels : variations de l'armature, variations des carènes, variations de longueur et de forme.

1°. *Variations de l'armature.* (Pl. **28**.) L'armature spinuleuse de la carène dorsale peut être observée dans la majorité des exemplaires, mais elle disparaît totalement chez les autres et l'on observe tous les passages entre ces deux états extrêmes. Quand son développement est maximum (Pl. **27**, fig. 2 ; Pl. **28**, fig. 1) elle comprend en moyenne

13 spinules, qui forment une série commençant très peu en arrière de l'orbite et se terminant toujours avant la pointe ; ce nombre est rarement dépassé, mais souvent il reste inférieur et alors la disposition en série présente fréquemment des modifications profondes. On trouve des individus où la série se dissocie en fragments (Pl. 28, fig. 2) d'autres où elle se réduit à un petit groupe de spinules (Pl. 28, fig. 12) qui peut occuper toutes les positions sur la carène, parfois même il n'y a plus qu'une spinule (Pl. 28, fig. 10) dont la position n'est pas moins variable que celle du groupe précédent. On arrive ainsi à une carène dorsale inerme par suppression totale des spinules. (Pl. 28, fig. 7, 8, 9, 13.)

Le même résultat est également atteint par atténuation des spinules, qui se réduisent alors à de petites dents fort peu saillantes. Cette atténuation peut frapper toutes les spinules (Pl. 28, fig. 5) ou seulement un certain nombre d'entre elles ; dans le premier cas, on est bien près de la structure qui caractérise les rostres dorsalement inermes. Il est possible que la réduction précédente soit une simple étape conduisant à la disparition des spinules, mais comme elle est rare, je crois plutôt que le rostre peut devenir dorsalement inerme par deux procédés : la disparition brusque des spinules et la réduction préalable de ces dernières à l'état de simples denticulations.

J'en dirai autant, pour la même raison, des denticules de la carène ventrale. Leur nombre ne semble guère dépasser 7, il est même le plus souvent inférieur (Pl. 28, fig. 11) et varie jusqu'à la disparition complète de l'armature. Dans certains individus les denticules sont très réduits, à peine saillants (Pl. 28, fig. 5), ce qui conduit, par une autre voie, à la disparition complète de l'armature ventrale.

2°. *Variations des carènes.* (Pl. 28.) Quelle que soit son armature, la carène dorsale persiste presque toujours, plus forte généralement quand elle est armée de spinules, plus faible dans le cas contraire, surtout quand ce caractère coïncide avec une grande brièveté du rostre ; mais il y a des exceptions à cette double règle, plusieurs individus à rostre court (Pl. 28, fig. 7) ayant une carène dorsale bien développée. Je n'ai vu la carène totalement disparaître que chez certains exemplaires où le rostre se réduisait à une simple saillie frontale (Pl. 28, figs. 9 et 10).

Bien plus intéressantes sont les variations de la carène ventrale. Dans les individus où le rostre est en sabre, cette carène atteint son maximum de hauteur vers le milieu (Pl. 27, fig. 2, Pl. 28, fig. 1), et se réduit progressivement dans les deux sens pour arriver au niveau des carènes latérales : en avant, ce niveau est atteint à la pointe même, en arrière près de la base des pédoncules optiques. Toutefois, même dans les individus où le rostre est en sabre, cette disposition n'est pas toujours réalisée : dans certains cas, la carène ventrale n'est apparente que dans la moitié antérieure ou dans une région peu étendue de la partie antérieure du rostre (Pl. 28, fig. 11), parfois au contraire elle reste apparente, quoique en s'atténuant, jusqu'au niveau d'insertion des pédoncules oculaires (Pl. 28, fig. 12). Les mêmes observations s'appliquent aux cas bien plus nombreux où le rostre, plus ou moins court, n'affecte plus la forme d'un sabre ; alors, il est même des individus où la carène ventrale s'exhausse en arrière (Pl. 28, figs. 6 et 7), d'autres où elle présente au milieu son maximum de hauteur ; des observations de cette nature peuvent être faites jusque sur des spécimens dont le rostre est beaucoup plus court que les pédoncules oculaires. Quelle que soit la longueur du rostre, il arrive enfin que la carène ventrale

disparaisse et alors le rostre devient plat en dessous, et reçoit presque exclusivement sa forme des carènes latérales que nous allons étudier (Pl. **28**, figs. 9, 10, 13, 14, 15).

3°. *Variations de longueur et de forme* (Pl. **28**). Les carènes latérales, en effet, sont toujours bien développées, même chez les exemplaires où le rostre devient rudimentaire. La règle, qui ne comporte aucune exception, c'est qu'elles s'atténuent de la base à l'extrémité, leurs bords formant un angle dont le sommet se trouve à la pointe du rostre ; les différences proviennent de la direction des côtés de l'angle et de la longueur du rostre.

Dans la très grande majorité des cas les carènes latérales convergent beaucoup plus à la base qu'au sommet du rostre. Il en résulte que ce dernier, vu du côté dorsal, présente la forme d'un triangle dont le sommet s'étire en pointe (Pl. **28**, fig. 1′). Lorsque le rostre est allongé, le changement de convergence apparaît d'ordinaire vers le milieu de sa longueur ; dans le cas contraire, la pointe qui résulte de ce changement devient beaucoup plus courte (figs. 2′, 3′, 4′, 6′) ; quand le rostre est bref ou très bref, cette pointe se réduit à un simple mucron (figs. 7′, 8′). Il est très rare d'observer une convergence régulière des côtés des carènes latérales, auquel cas le rostre se présente sous la forme d'un triangle à bords parfaitement rectilignes (fig. 5′).

J'ai dit plus haut que le rostre pouvait atteindre et même dépasser le bout distal des pédoncules antennulaires, j'ajoute qu'il peut se réduire à une simple avance frontale très peu saillante et qu'entre ces deux extrêmes on peut trouver tous les intermédiaires (figs. 1′ à 10′ de la Pl. **28**). Quand le rostre est très court, plus court que les pédoncules oculaires, les bords des carènes latérales forment une ligne convexe en dehors, de sorte que les côtés du triangle rostral sont arrondis (figs. 6′ à 10′). Même dans ces cas persiste alors le plus souvent le mucron terminal ; toutefois, dans les individus rarissimes où la réduction du rostre atteint son maximum, on voit disparaître le mucron en même temps que les carènes dorsale et ventrale (figs. 9′, 10′). Le rostre consiste alors en une légère avance frontale dont les bords et le sommet sont arrondis ; on se croirait en présence de la *Caridina singhalensis*, mais je montrerai dans la suite que cette dernière espèce est foncièrement différente de la nôtre.

Au surplus, si l'on se bornait à l'examen du rostre, la plupart des espèces de Caridines pourraient être rapportées à la *C. brevirostris* et cela montre la vanité de toute classification établie sur la structure rostrale. Pourtant l'espèce que j'ai appelée *C. similis* doit être considérée comme une simple forme de la *C. brevirostris* ; elle en possède tous les autres caractères et d'ailleurs provient aussi des Seychelles. La forme *similis* peut être distinguée par son rostre long ou assez long, le développement de ses deux carènes impaires et la présence de denticules sur sa carène ventrale (Pl. **28**, fig. 11). J'ai groupé dans une autre forme, appelée *Gardineri*, les individus qui présentent des caractères identiques, mais avec une carène dorsale spinuleuse, quelle que soit d'ailleurs la carène ventrale (Pl. **27**, fig. 2 ; Pl. **28**, figs. 1 à 5 et fig. 12). Quant aux individus où le rostre est plus court que les pédoncules oculaires, ils représentent la forme *typica* de l'espèce ; le plus souvent leurs carènes impaires sont inermes ou disparaissent, mais il va sans dire qu'on peut trouver entre eux et les formes précédentes les transitions les plus ménagées (Pl. **28**, figs. 6—10 et fig. 15).

Variations des chélipèdes (Pl. **29**). Avant d'aborder l'étude des chélipèdes de notre espèce, il ne sera pas inutile de noter que les genres *Caridina* et *Ortmannia* sont très voisins l'un de l'autre, que le second dérive sûrement du premier et qu'il en diffère seulement par une plus grande similitude des chélipèdes : alors que ces deux paires d'appendices sont fort dissemblables dans les Caridines, ceux de la première étant bien plus courts et plus massifs que ceux de la seconde, avec le carpe échancré en avant, ils sont au contraire à peu près du même type dans les Ortmannies, ceux de la seconde étant seulement un peu plus grêles et plus longs avec une échancrure carpienne plus faible. Ceci étant rappelé, nous allons voir que la *C. brevirostris* présente tous les passages entre le *type caridinien* le plus net et une *forme préortmannienne* qui annonce le type Ortmannie sans que ce type lui-même soit toutefois réalisé.

1°. *Forme nettement caridinienne.* Chez les individus qui présentent la première forme (Pl. **29**, figs. 1 et 1′) les chélipèdes ressemblent tout à fait à ceux des Caridines les plus typiques, voire à celles qui appartiennent aux espèces primitives du genre. Dans les chélipèdes antérieurs (fig. 1), les pinces restent assez faibles, parce que peu dilatées dans leur portion palmaire qui est plus courte que les doigts, le carpe est bien plus long que large avec une échancrure antérieure médiocre, ce qui correspond à la médiocre saillie postérieure de la portion palmaire. Les chélipèdes suivants (fig. 1′) se distinguent par leur longueur et leur gracilité beaucoup plus grandes : la pince est faible et rétrécie à la base de sa portion palmaire qui est beaucoup plus courte que les doigts, le carpe est étroit, un peu dilaté en avant, aussi long ou plus long que les pinces. D'ailleurs, dans les chélipèdes des deux paires, les doigts se terminent par un grêle stylet qui égale à peu près les soies denticulées contiguës (Pl. **29**, figs. 1*a* et 1*b*).

2°. *Forme préortmannienne* (Pl. **29**, figs. 6 et 6′). Dans cette forme, les pinces antérieures (fig. 6) sont fortes, massives, ovoïdes, ce qui tient au grand développement de la portion palmaire qui est plus longue que les doigts, fort large et d'ordinaire plus ou moins rétrécie d'arrière en avant ; le carpe qui porte ces pinces est lui-même très-massif, plus large que long, beaucoup plus court que les pinces, avec une profonde échancrure, ce qui correspond à la forte saillie postérieure de la portion palmaire. Dans les exemplaires où se manifeste la plus grande ressemblance avec les Ortmannies, les pinces de la seconde paire (fig. 6′) sont ovoïdes comme les précédentes, mais notablement moins fortes, le carpe est assez large et un peu plus court que les pinces ; dans d'autres exemplaires moins modifiés (fig. 5′), la pince peut se rétrécir un peu en arrière, le carpe rester grêle et dépasser la pince en longueur. Mais dans tous les cas, les doigts des deux paires de pinces sont au plus aussi longs que la portion palmaire et se terminent tous par un ongle large et fort (5′*a*, 6*a*) dont l'extrémité distale est arrondie (Pl. **29**, figs. 5 et 5′, 6 et 6′). Les exemplaires de cette forme se rapprochent beaucoup de l'*Ortmannia Edwardsi* Bouv. dont ils ne se distinguent que par deux caractères : l'absence de toute échancrure sur le bord antérieur du carpe des pattes de la seconde paire et le développement d'un seul ongle au lieu de cinq à l'extrémité des doigts.

Entre ces deux formes extrêmes s'intercalent des intermédiaires nombreux, surtout au point de vue de la forme des pinces, de la longueur des doigts, des dimensions du carpe

(Pl. **29**, figs. 2, 3, 4) ; quant aux variations de l'armature terminale des doigts, elles sont forcément plus restreintes et se limitent soit à une certaine variation de longueur dans les ongles, soit à la substitution de l'ongle au stylet dans les pattes de la première paire. Jamais on ne trouve d'ongles aux pattes postérieures quand il existe des stylets au bout des doigts de la paire précédente.

En somme, on peut dire de la structure des chélipèdes ce que nous avons dit en traitant de la structure du rostre ; les variations qu'elle présente apparaissent si nombreuses et si étendues qu'on ne saurait en tirer parti pour caractériser l'espèce et qu'il faut, par cela même, les éliminer dans la systématique du genre Caridine.

Autres caractères largement variables. D'autres caractères varient dans une large étendue, encore qu'ils présentent une stabilité assez grande chez la plupart des individus.

Je signalerai en premier lieu, comme appartenant à ce groupe, l'angle infra-orbitaire qui occupe le bord antérieur de la carapace. Cet angle présente du côté des yeux une dilatation aliforme et, presque toujours, se termine en une pointe aiguë (Pl. **28**, figs. 1, 2, etc.) qui présente des variations considérables ; tantôt assez longue et vraiment spiniforme (figs. 1, 2), tantôt réduite, mais plus rarement, à un simple mucron (Pl. **28**, fig. 5) qui peut même disparaître (fig. 7). C'est à peu près exclusivement dans certains individus de la forme *typica* la plus nette que l'épine se réduit à un mucron ; chez d'autres individus de la même forme, surtout chez ceux où le rostre est fort court, le mucron disparaît lui-même et alors la saillie infra-orbitaire n'est plus autre chose qu'un angle arrondi (fig. 7), comme dans la *C. singhalensis* Ortmann et dans la *C. atyoides* Nobili.

De même nature, quoique moins étendues, sont les variations de l'épine qui fait saillie en dehors à l'extrémité distale du premier article des pédoncules antennulaires. D'ordinaire, cette épine est grêle, très aiguë et égale au tiers de la longueur du second article (Pl. **27**, fig. 2 ; Pl. **28**, figs. 1, 2, etc.) sur les flancs et à la base duquel on la trouve. Or, elle peut se réduire beaucoup en longueur en même temps qu'elle s'élargit, et prendre la forme d'un triangle à sommet peu aigu (Pl. **28**, fig. 7). C'est également chez les individus *typica* dont le rostre est particulièrement bref qu'on observe cette réduction ; toutefois l'épine ne disparaît jamais complètement et même, en aucun cas, ne devient rudimentaire comme on l'observe dans la *C. singhalensis*.

Il convient de signaler également les variations assez considérables de l'angle sous-antennaire formé par le bord du deuxième article des pédoncules des antennes à son extrémité inféro-externe (Pl. **27**, fig. 4). Quand il est bien développé, ce qui est le cas de beaucoup le plus fréquent, cet angle apparaît comme une épine quand on examine la crevette latéralement (Pl. **27**, fig. 2), mais quand on regarde celle-ci par dessous (Pl. **27**, fig. 4), il se présente sous sa forme réelle, c'est-à-dire comme un angle aigu assez largement ouvert, un peu infléchi en dedans, terminé en pointe mais sans prolongement spiniforme. C'est encore chez les formes à long rostre qu'il est d'ordinaire le plus développé, mais d'ordinaire aussi, on le voit se réduire chez les formes brévirostres et bien souvent alors il ne se présente plus qu'à l'état d'une faible saillie obtuse (Pl. **28**, fig. 7).

Caractères constants ou peu variables. Les caractères constants ou peu variables

sont nombreux, mais il faut y établir deux groupes : un premier pour les caractères communs aux diverses Caridines, un second pour ceux qui paraissent de nature spécifique. Les caractères du premier groupe ne méritent pas de nous arrêter, ils se rapportent aux fouets antennulaires et antennaires, aux appendices buccaux et aux branchies, à l'angle formé latéralement, sur son bord postérieur, par le sixième segment abdominal, au telson et à l'endopodite des uropodes. Une analyse et des recherches plus minutieuses relèveront sans doute quelques traits spécifiques parmi ces caractères, mais la tâche que j'avais entreprise était suffisamment ardue et il m'a semblé prudent et convenable d'en laisser une part à d'autres.

La seconde série de caractères est plus importante parce qu'elle fournit le moyen d'ébaucher une nouvelle classification des Caridines. Je vais passer successivement en revue chacun des caractères de cette série.

1°. *La carapace* (Pl. **27**, fig. 1). Elle présente une voussure dorsale très nette dans notre espèce où d'ailleurs elle est relativement courte, sa hauteur maximum égalant environ les $\frac{4}{5}$ de sa longueur post-orbitaire, cette dernière étant mesurée depuis le fond de l'orbite jusqu'au bord postérieur correspondant. L'angle antéro-inférieur est arrondi et obtus, c'est-à-dire un peu plus grand qu'un angle droit. Les variations de ces caractères sont très réduites.

2°. *Pédoncules oculaires* (Pl. **27**, fig. 2, et Pl. **28**). Ils sont subcylindriques, la région cornéenne n'étant pas dilatée ou l'étant fort peu ; celle-ci recouvre à peu près la moitié de la longueur des pédoncules qui sont relativement courts ; il y a une petite échancrure dorsale sur le bord postérieur de la cornée.

3°. *Région antennulaire.* L'arceau (Pl. **27**, fig. 3) qui porte les antennules est triangulaire et aplati ; son sommet est aigu ou subaigu et son axe ne s'élève jamais en une forte carène verticale à bords tranchants comme dans les Caridines du groupe de la *C. typus.* L'acicule antennulaire dépasse un peu les yeux (Pl. **28**), mais n'atteint pas l'extrémité distale du premier article des pédoncules antennulaires. Le rapport de la longueur préorbitaire de ces derniers à la longueur post-orbitaire de la carapace varie entre 0·71 et 0·55 ; il atteint d'ordinaire son maximum chez les individus où le rostre est allongé, son minimum chez les *typica* où le rostre est le plus réduit.

4°. *Antennes.* Elles présentent des variations assez grandes. D'ordinaire, le dernier article de leurs pédoncules est court (Pl. **27**, fig. 2 ; Pl. **28**, fig. 1), dépasse peu le bout distal du premier article des pédoncules antennulaires et n'atteint pas le milieu de l'écaille ; l'épine de cette dernière apparaît d'ordinaire peu large à la base et très aiguë. C'est chez les individus à rostre long ou médiocre qu'on observe les dispositions précédentes, mais dans beaucoup de *typica*, surtout chez ceux où le rostre est bref, le pédoncule des antennes peut atteindre le milieu de l'écaille et l'épine de celle-ci devenir large et un peu obtuse (Pl. **28**, fig. 7′).

5°. *Epipodite des pattes-mâchoires postérieures.* L'épipodite des maxillipèdes postérieurs présente, chez toutes les Caridines, un prolongement basilaire dirigé contre les branchies. Ce prolongement, dans sa forme et dans sa longueur, varie d'une espèce à l'autre. Chez la *C. brevirostris* il est un peu plus court que l'épipodite lui-même

et se présente sous la forme d'une lame triangulaire droite qui se termine en pointe obtuse (Pl. **27**, figs. 5 et 6). J'ajoute que beaucoup d'autres espèces offrent une disposition semblable.

6°. *Pattes ambulatoires.* Les pattes ambulatoires (Pl. **27**, figs. 8 et 9) sont assez grêles, avec le propodite à peu près droit, ce qui distingue notre espèce de certaines autres, notamment de la *C. Davidi* Bouv. où les mêmes appendices sont épaissis, avec le propode nettement arqué.

Je ne crois pas qu'il soit possible d'utiliser pour la systématique les grosses épines du méropodite et du carpe, non plus que celles, plus menues et plus courtes, du bord inférieur du propodite (Pl. **27**, figs. 8 et 9) ; les premières m'ont paru à peu près constantes chez les diverses Caridines et les secondes assez variables d'un exemplaire à l'autre dans une même espèce (figs. 8 et 9). Par contre je pense, à l'exemple de M. de Marn, qu'on peut trouver de bons caractères spécifiques dans la forme des doigts, dans leur armature et dans leur longueur relative, encore que ces caractères soient frappés de variations plutôt étendues.

Les doigts des pattes ambulatoires de la 1ère paire (p^3) sont triangulaires, légèrement arqués et, comme de coutume, se terminent par un forte griffe courbe (Pl. **27**, fig. 7). Leur bord interne est droit ou faiblement convexe, armé de 5 à 7 épines dont la première (l'épine voisine de la griffe) est la plus forte. Comme on le verra par le tableau de la page suivante, ils sont assez courts, leur longueur variant, à très peu près, du $\frac{1}{4}$ au $\frac{1}{5}$ de la longueur du propodite.

Les pattes ambulatoires de la 2e paire (p^4) sont très sensiblement identiques aux précédentes.

Les pattes ambulatoires de la dernière paire (p^5) sont très différentes, leur doigt étant rectiligne, rarement triangulaire, mais presque toujours avec les deux bords subparallèles (je veux dire peu convergents) et le bord inférieur droit ou un peu convexe, toujours fortement convexe avant la griffe (Pl. **27**, fig. 10). Comme dans les autres Caridines, ce dernier bord est muni d'une peigne de spinules contiguës, incisées sur leurs bords. Dans notre Caridine ces incisions microscopiques sont peu accentuées et le nombre des spinules varie ordinairement de 30 à 35, encore qu'il s'élève parfois à 37 ou descende à 26. Il est peu de Caridines où le nombre des spinules soit aussi faible. Le doigt des pattes ambulatoires postérieures est plus long que celui des pattes précédentes, mais le propode est également plus allongé, de sorte que le rapport des deux articles reste à peu près le même : il varie entre 4 et 5.

7°. *Epimères abdominaux.* Les épimères du 1er segment abdominal sont différents dans les deux sexes, leur bord antéro-inférieur étant un peu convexe chez les mâles (Pl. **27**, fig. 11) et chez les jeunes, droit et même le plus souvent un peu concave chez les femelles (fig. 12). Des différences analogues s'observent dans plusieurs autres espèces, mais non chez toutes, de sorte qu'elles peuvent servir à caractériser la *C. brevirostris.*

Dans le 4e segment abdominal l'angle postérieur des épimères est arrondi ou largement obtus (Pl. **27**, fig. 13), tandis que le même angle est subaigu dans les épimères de l'anneau

suivant dont les deux bords sont d'ailleurs nettement convexes (Pl. **27**, fig. 14). Ces deux caractères sont sujets à quelques variations, mais ils ne semblent pas sans valeur encore qu'ils se présentent chez de nombreuses autres Caridines.

8°. *Uropodes.* Les caractères des uropodes ont une importance beaucoup plus grande. Dans le *C. brevirostris*, l'article basilaire de ces appendices se prolonge sur l'exopodite, où il forme un angle uropodial aigu ou mucroné dont le bord supéro-interne, ordinairement droit ou concave, est aussi long ou plus long que la distance de sa base au bord opposé (Pl. **27**, figs. 17 et 18). D'autre part, la ligne articulaire spinuleuse de l'exopodite (Pl. **27**, figs. 17, 19, 20) a une direction légèrement sigmoïde, elle atteint à peu près l'axe médian de l'appendice (fig. 19), et présente un assez grand nombre de spinules mobiles, de 15 à 20 presque toujours, très rarement 14 (fig. 20).

9°. *Œufs.* Les œufs sont largement ovoïdes, toujours de grande taille et par conséquent assez peu nombreux ; leur grand diamètre descend rarement au-dessous de 1 mm. et peut atteindre 1 mm. 3, leur petit diamètre varie autour de 0·80.

On trouvera dans le tableau ci-joint les nombres relatifs à quelques caractères médiocrement variables, dans un certain nombre d'individus très divers de la *C. brevirostris.*

	Longueur des péd. antennulaires et de la carapace			Pattes ambulatoires antérieures				Pattes ambulatoires postérieures				Epines uropodiales
	Ped. ant.	Carapace	Rapport	Long. du doigt	Long. du propode	Rapport des longueurs	Epines du doigt	Long. du doigt	Long. du propode	Rapport des longueurs	Spinules du doigt	
Typica												
Jeune ♀ normale	2 mm.	3·6 mm.	0·55	0·33 mm.	1·7 mm.	5·1	5	0·43 mm.	2 mm.	4·08	28	17
♀ à rostre court et armé.....	3·1 „	4·9 „	0·63	0·51 „	2·5 „	4·9	7	0·41 „	2 „	4·9	37	21
♀ à rostre court	2·9 „	5 „	0·58	0·52 „	2·1 „	4	5	0·58 „	2·8 „	4·8	26	17
♂ à rostre très court.....	2·5 „	4 „	0·60	0·37 „	1·8 „	4·8	6	0·42 „	2 „	4·7	30	14
Similis												
♀ à rostre long...	3 „	5 „	0·60	0·52 „	2·1 „	4	7	0·61 „	2·7 „	4·4	35	20
♀ à rostre long et inerme.....	2·9 „	4·3 „	0·67	0·41 „	1·9 „	4·6	6	0·54 „	2·2 „	4·1	32	15—16
Gardineri												
♀ à rostre très long	3 „	5 „	0·60	0·42 „	2·1 „	5	6	0·60 „	2·6 „	4·3	37	16
♀ à rostre long	3 „	4·2 „	0·71	0·44 „	1·7 „	3·8	6	0·55 „	2·2 „	4	36	
♀ à rostre moyen	2·7 „	4·8 „	0·56	0·36 „	2 „	5·5	6	0·46 „	2·4 „	5·2	33	15
♀ à rostre moyen	2·9 „	4·6 „	0·63	0·38 „	2 „	5·2	7	0·51 „	2·2 „	4·3	35	19
♀ à rostre assez court.....	2·5 „	4·6 „	0·54	0·47 „	2·1 „	4·4	5	0·51 „	2·5 „	4·9	26	15—16
♀ à rostre court	3 „	4·9 „	0·61	0·42 „	2·1 „	5	6	0·55 „	2·6 „	4·7	37	17—18

Sur l'origine et l'importance zoologique des variations de la Caridina brevirostris.

Ainsi, la *Caridina brevirostris* est le siège de variations nombreuses, les unes légères, les autres assez grandes, certaines d'une amplitude extraordinairement étendue. Il nous faut maintenant chercher l'origine de ces variations et montrer l'importance qu'elles présentent au point de vue zoologique.

Le mécanisme et l'origine de ces variations. Avant de remonter à l'origine de ces variations, il convient d'étudier le mécanisme qui les a produites, et, sur ce point, je crois suffisant de relever les considérations suivantes empruntées à une note préliminaire de date récente (*1912ª*, 919).

" Etant données les innombrables variations de l'animal et les passages qui relient ces variations entre elles, on pourrait croire que notre Caridine, au lieu d'être une forme autonome, résulte du croisement de deux espèces, l'une primitive à long rostre du type *Gardineri* avec les pinces de la première paire fort différentes des suivantes, l'autre à rostre court de la forme *typica*, avec des chélipèdes peu dissemblables et plus ou moins ortmanniens. Cette hypothèse a l'avantage d'expliquer fort simplement la plupart des variations observées et respecte l'ancienne classification en accordant au rostre et aux chélipèdes une importance systématique de premier ordre ; les deux espèces présumées, dans cette hypothèse, seraient situées aux deux pôles du genre, l'une très primitive, l'autre à évolution très avancée. Mais alors, comment expliquer que deux espèces aussi lointaines se croisent avec une telle facilité ? Comment admettre surtout qu'elles se ressemblent par ailleurs de tous points, qu'elles aient le même facies, le même air spécifique et, en somme, cette multitude de caractères communs qui nous ont permis de les distinguer des autres espèces du même genre ?

" Il nous faut donc abandonner l'hypothèse de deux espèces en croisement et considérer notre Caridine comme une forme autonome.

" Mais cela ne résout pas le problème des extraordinaires variations de l'espèce,...sont-elles le résultat de transformations lentes et progressives ou proviennent-elles brusquement de mutations ?

" Si l'on admet une variation lente et progressive, il faut admettre pour point de départ une forme très longirostre à pinces nettement caridiniennes et pour terme ultime des individus à rostre presque nul et à pinces plus ou moins ortmanniennes ; ces deux formes extrêmes sont identiques à celles que nous avons admises dans l'hypothèse de deux espèces en hybridation, mais la seconde dérive de la première par des passages progressifs au lieu d'être un point de départ comme elle, tous les individus étant d'ailleurs capables de se croiser entre eux.

" La supposition n'a rien d'invraisemblable, encore que les deux formes extrêmes soient très rares et que la seconde ne présente jamais des représentants de grande taille. Ce qui la rend sujette à caution, c'est qu'elle réclame une continuité absolue dans des influences modifiantes qui devaient être fort dissemblables, puisque les unes agissaient sur le rostre (et les pédoncules antennulaires, les épines orbitaires de la carapace, etc.), les autres in-

dépendamment sur les chélipèdes. D'ailleurs, j'ai constaté des variations plus grandes encore dans une espèce de Maurice, la *Caridina Richtersi* Thallw., où l'on arrive à des individus franchement ortmanniens qui, séparés des autres par un large hiatus, n'en peuvent provenir par évolution lente.... Pour ces motifs, il me paraît peu rationnel d'attribuer à une évolution lente et progressive la plupart des variations de la *C. brevirostris.*

" Nous voici donc, semble-t-il, devant un type en mutation active qui dépense à l'heure actuelle une force d'évolution longuement accumulée et qui donnera sans doute naissance, dans la suite, à bon nombre de formes nouvelles, les unes du genre *Caridina*, les autres du genre *Ortmannia.* Par ses variations nombreuses et très diverses, notre espèce n'est pas sans analogie avec la *Draba verna*, petite Crucifère multiforme sur laquelle ont appelé l'attention les célèbres expériences culturales d'Alexis Jordan. Mais la ressemblance ne va pas plus loin : comme le fait remarquer M. de Vries, les variations de la *Draba verna* se fixent très vite en ' petites espèces,' d'abord parce que ' les anthères s'ouvrent dans les boutons floraux et pollinisent les stigmates avant l'ouverture des fleurs,' ensuite parce que ces dernières sont ' très peu visibles,' et ne reçoivent guère la visite des Insectes ; tandis que les représentants de la *Caridina brevirostris*, quelles que soient leurs variations, peuvent à coup sûr se croiser entre eux, ce qui entrave, dans une large mesure, l'isolement des formes nouvelles. Pour que des formes semblables, dans nos Crevettes, arrivent à s'isoler, il faut qu'elles soient le résultat d'une mutation fort ample, capable de s'opposer au croisement ; il en est sans doute ainsi chez les espèces d'*Ortmannia* qui, très variables, donnent brusquement des *Atya* parfaitement stables ; la *Caridina brevirostris* s'essaye, à n'en pas douter dans des directions multiples, mais elle n'a pas encore atteint le type générique supérieur, celui du *Ortmannia*, où elle pourrait se fixer."

L'isolement d'animaux agiles commes les Crevettes est, à coup sûr, difficilement réalisable dans les conditions naturelles, mais quand par hasard il se produit, on voit se fixer en races certaines des formes issues de la mutation. C'est là, semble-t-il, ce que l'on peut constater en divers points des Seychelles pour notre Caridine. Les captures effectuées dans ces îles par M. Stanley Gardiner sont réparties en 12 bocaux qui correspondent sans doute à un même nombre de pêches distinctes ; or, tandis que la plupart de ces flacons renferment des individus fort variés, trois d'entre eux ne comprennent que des *typica* normaux peu différents les uns des autres : deux proviennent de la Cascade de Mahé, l'un avec 50 individus, l'autre avec 150, le troisième fut rempli au Morne Seychellois, le 22 novembre 1905, et comprend une centaine de *typica.*

Tandis que les individus de la forme *typica* peuvent se trouver sans mélange et constituer en certains lieux une race à peu près pure, les représentants des autres formes sont toujours extraordinairement variés et presque toujours en compagnie de *typica* auxquels ils se relient par de nombreux passages. Et puisque les individus plus ou moins longirostres se rapprochent bien plus que les brévirostres du type caridinien primitif, on a des raisons de croire que la *C. brevirostris* tend à s'éloigner de ce type par des mutations nombreuses, par une explosion de caractères, et que la forme *typica* issue de ces mutations représente un état d'équilibre nouveau qui, sous l'influence de l'isole-

ment, se traduira dans la suite par la naissance d'une race, peut-être même d'une espèce nouvelle.

Il est trop évident que la sélection naturelle ne saurait expliquer les variations nombreuses de la *Caridina brevirostris*; et quant à la théorie Weismannienne de la sélection germinale, elle ne fait que reculer la difficulté puisqu'elle suppose des variations dans les déterminants, c'est-à-dire dans le plasma germinatif des individus. Il faut donc nous résoudre à voir dans les mutations de cette sorte—comme dans toutes les mutations—le résultat d'une influence de milieu qui s'est fait longuement sentir et qui s'est pour ainsi dire accumulée dans le protoplasme des représentants de l'espèce avant de se manifester au dehors par une explosion de caractères. Sans doute, l'influence du milieu n'est pas aussi nettement visible dans les mutations que dans les variations lentes, mais il est des exemples magnifiques où elle se manifeste également sur des jeunes qui n'ont pu en ressentir les effets: c'est parce que leurs ancêtres furent de francs herbivores que les jeunes Ruminants quittent l'utérus maternel avec les tubercules molaires arasés; et de même, c'est parce que les Paguriens habitent depuis une longue série de siècles des coquilles dextres que leurs glaucothés symétriques deviennent asymétriquement dextres avant de chercher un logis. Dans les deux cas, l'influence du milieu sur le nouveau-né est réduite ou nulle, ce qui compte, c'est l'influence sur les ancêtres, influence qui se révèle par l'éclosion brusque de certains caractères. Il doit en être de même dans notre Caridine; ses représentants ont longuement subi l'influence du milieu où ils vivaient et la manifestent aujourd'hui par une éclosion brusque de caractères.

Conséquences principales des observations qui précèdent. De tous ces caractères éclos par mutation, ceux relatifs aux chélipèdes me paraissent les plus intéressants parce qu'ils mettent en évidence le processus suivant lequel les *Caridina* évoluent dans le sens du type générique immédiatement supérieur, le type *Ortmannia*. En même temps qu'elle subit des modifications nombreuses dans sa carapace, ses appendices céphaliques, ses segments et ses appendices abdominaux, notre Caridine se rapproche peu à peu des Ortmannies par la structure de ses chélipèdes dont les deux paires finissent par être peu dissemblables et acquièrent alors un facies pseudo-ortmannien. On pourrait croire que ces variations des chélipèdes sont le résultat d'un croisement entre Caridines et Ortmannies, mais il faut renoncer à cette hypothèse, car les *Ortmannia* ne présentent aucun représentant aux Seychelles, et parmi les 3,000 individus de *Caridina brevirostris* capturés dans ces îles, je n'en ai pas trouvé un seul du type franchement ortmannien. On doit par conséquent admettre que notre espèce évolue d'elle-même dans le sens *Ortmannia*, sans aucun rapport sexuel avec les représentants de ce dernier genre. Cette évolution est indépendante de toutes les autres variations subies par l'espèce; elle peut se manifester chez toutes les formes de notre Caridine, qu'elles soient longirostres ou brévirostres; elle se manifeste même chez les *typica* en isolement comme j'ai pu le constater dans un groupe capturé à Praslin et qui renfermait 70 individus de cette forme. On peut dire en somme que ce qui domine dans les variations de la *Caridina brevirostris*, c'est la tendance des chélipèdes à se rapprocher du type ortmannien.

Le type *Ortmannia* ne semble pas encore réalisé chez la *Caridina brevirostris*

mais les observations que j'ai pu faire (*1912*[b]) sur le *Caridina Richtersi* Thallw. montrent que cette réalisation se manifestera quelque jour. La *C. Richtersi* est une espèce particulière à l'île Maurice ; j'ai eu la bonne fortune de pouvoir en réunir 250 exemplaires qui proviennent presque tous des environs de St Louis où ils furent capturés à mon intention par un très aimable correspondant, M. le Dr Barbeau. L'espèce est en pleine mutation comme la *C. brevirostris* ; elle varie à peu près de la même manière, toutefois avec cette différence intéressante que certains de ses représentants, 5 sur 250, sont des *Ortmannia* tout à fait typiques ; beaucoup d'autres exemplaires appartiennent au type caridinien le plus net, mais la plupart se rapprochent à divers degrés du type des Ortmannies par leurs chélipèdes et plusieurs d'entre eux réalisent une forme préortmannienne identique à celle de la *C. brevirostris* : j'ai donné à la mutation ortmannienne de la *C. Richtersi* le nom d'*Ortmannia Edwardsi* (*1905*, 103). Les cinq exemplaires de cette forme sont bien réellement du type spécifique de la *C. Richtersi*, mais ils se distinguent par leurs caractères de genre qui sont du type *Ortmannia* le plus net. Ici, la mutation est de pleine évidence, et de grande envergure : avec le carpe de leurs chélipèdes postérieurs sans échancrure distale et l'ongle simple qui termine leurs pinces, les individus préortmanniens de la *C. Richtersi* sont encore de vraies Caridines, tandis que l'*Ortmannia Edwardsi* présente une échancrure carpienne sur ses chélipèdes des deux paires et se rapproche de l'*Ortmannia Henshawi* par les ongles multiples de ses pinces (5 ongles dont un impair et les quatre autres en deux paires). Et il n'y a pas de transitions entre les deux formes !

Cette similitude dans les variations de la *C. Richtersi* et de la *C. brevirostris* entraîne des conséquences importantes. De ce fait que les chélipèdes varient de la même manière dans les deux espèces, on peut conclure que la *Caridina brevirostris évolue dans le sens ortmannien comme la C. Richtersi et qu'elle atteindra sûrement, comme cette dernière, le stade générique supérieur, celui des Ortmannia.* Et du fait que les individus plus ou moins ortmanniens de la *C. brevirostris* ne sont pas des hétérozygotes provenant d'une hybridation entre *Ortmannia* et *Caridina*, on doit conclure que les mêmes formes de la *C. Richtersi* sont également indépendantes de toute hybridation[1] ; ce qui revient à dire que *l'évolution ortmannienne*, dans les deux crevettes, *s'effectue au sein même de l'espèce, sans le concours d'aucune forme du type ortmannien.*

Cette conclusion n'est-elle pas également applicable aux espèces d'*Ortmannia* qui donnent actuellement des *Atya* ? Ces espèces ressemblent aux précédentes par leur variabilité extraordinaire qui frappe surtout les chélipèdes et par le profond hiatus qui éloigne les individus ortmanniens des individus atyiens ; chez elles, toutefois, la mutation bat son plein, elle donne en grand nombre des individus des deux formes, d'où l'on a pu croire que la production d'individus atyiens et ortmanniens par une femelle ortmannienne résulte du croisement de cette femelle avec un mâle atyien. L'hypothèse est de M. Cuénot (*1911*, 399) ; bien que très plausible, on doit la tenir pour superflue, la *C. Richtersi* nous

[1] Au surplus, comme je l'ai fait observer ailleurs (*1912*[a], 922), on ne saurait attribuer au croisement de la *Caridina Richtersi* avec l'*Ortmannia Edwardsi* les individus incomplètement ortmanniens de la Caridine ; ces individus, en effet, sont extrêmement nombreux, alors que ceux de la forme *Ortmannia Edwardsi* ne comptent que pour $\frac{1}{50}$ dans le chiffre de l'espèce.

montrant que les variations initiales d'une espèce et l'accession de cette dernière au type générique immédiatement supérieur peuvent s'effectuer en dehors de toute hybridation. Je fais allusion aux deux espèces d'*Ortmannia* où j'ai mis en évidence les mutations évolutives (*1904*, *1905*, *1909*[a]) : l'*Ort. Alluaudi* Bouv. qui donne des *Atya serrata* Sp. Bate et l'*Ort. Henshawi* Rathb. qui donne des *Atya bisulcata* Rand. On sait que M. Bordage (*1908*, *1909*[a], *1909*[b]), en élevant des femelles ovigères d'*Ortmannia Alluaudi*, a obtenu des individus de cette forme et des *Atya serrata*, tandis que des femelles d'*Atya serrata* n'ont donné que des exemplaires de leur type. Il y a mutation évolutive de l'*Ortmannia Alluaudi*, mais le type atyien réalisé ne semble pas faire retour en arrière.

Applications à la systématique du genre Caridine. Un autre résultat de l'étude qui précède, c'est la disqualification du système actuellement en usage pour la classification des Caridines. J'ai récemment exposé comme il suit les bases et l'histoire de ce système (*1912*[a]) :

" Les Crevettes d'eau douce du genre *Caridina* sont assez nombreuses ; on en connaît aujourd'hui près de 50 espèces et la liste n'est sûrement pas close. Ces espèces semblent très voisines les unes des autres, encore que leurs formes extrêmes présentent un contraste frappant ; il n'est pas facile de les caractériser et l'on doit quelque reconnaissance à M. J. G. de Man qui a tenté un sérieux effort dans ce but. La classification de M. de Man, établie en 1892 (*1892*), divise les Caridines en deux groupes d'après l'armature du bord supérieur du rostre qui est tantôt inerme, tantôt pourvu de denticules. Cette classification a été légèrement modifiée par M. Ortmann en 1894 (*1894*) et par moi-même en 1905 (*1905*), sans cesser de recevoir pour base la structure du rostre ; ainsi, les trois groupes dans lesquels j'ai réparti, en 1905, les diverses espèces du genre ont pour caractères respectifs : un rostre denticulé au moins en dessus et plus long que les pédoncules antennulaires (groupe de la *C. nilotica*), un rostre analogue mais plus court que ces pédoncules (groupe de la *C. laevis*), enfin un rostre inerme du côté dorsal et ordinairement peu allongé (groupe de la *C. typa*). Ces groupes correspondent assez bien à l'évolution du genre, les espèces du premier ayant des caractères primitifs qu'on ne rencontre pas dans les autres ; au surplus, pour distinguer les espèces de chaque groupe, j'ai eu recours, comme MM. de Man et Ortmann, à des caractères en apparence moins importants tels que l'armature épineuse de la carapace, des antennules et des antennes, la forme et les dimensions des chélipèdes ou pattes à pinces, la longueur relative des divers articles des pattes des trois paires postérieures ou pattes ambulatoires."

Etant données les variations extraordinaires de la *Caridina brevirostris*, et celles plus étendues encore de la *C. Richtersi*, il est trop évident que la classification précédente ne résiste pas à la critique. Fondée sur la structure rostrale, elle a une base fragile, presque protéiforme, qui permettrait de rapporter notre *Caridina brevirostris* à plus de vingt espèces ; et quant aux autres caractères qu'elle emploie, la plupart sont également versatiles, surtout ceux relatifs aux chélipèdes qui rivalisent, à ce point de vue, avec les caractères du rostre.

M. Borradaile avait amplement raison et j'ai dû chercher ailleurs les règles essentielles de la classification des Caridines.

L'une des plus importantes, à mon avis, doit être tirée des modifications adaptatives

subies par les divers représentants de la famille des Atyidés en ce qui concerne le genre de locomotion. Comme les Acanthéphyridés qui ont servi d'ancêtres à la famille, les Atyidés primitifs se distinguent par leur grande légèreté natatoire, légèreté qui provient surtout d'une grande souplesse dans les uropodes : en effet, chez les *Xiphocaris*, *Xiphocaridina*, *Troglocaris* et *Atyaëphyra*, les deux rames de chaque uropode sont minces, très flexibles, et l'on ne trouve qu'une spinule sur la ligne articulaire qui pénètre en dehors dans la rame exopodiale ou externe ; cette ligne est droite, et d'ailleurs fort courte, son bout interne n'atteignant jamais, il s'en faut, le milieu de la rame, c'est-à-dire l'axe longitudinal médian de l'exopodite uropodial. Inversement, à l'autre pôle de la famille, et surtout dans les *Atya*, la natation doit être lourde, comme la forme de l'animal qui semble plutôt fait pour se déplacer par saccades au milieu des herbes et même pour fouir sur les rives ; alors, toute flexibilité disparaît dans les rames uropodiales dont l'exopodite très-coriace présente une ligne articulaire sinueuse et allongée, d'ailleurs appuyée sur un rang dorsal d'épines de soutien fortes et nombreuses. Entre ces deux extrêmes se placent les *Caridina* et les *Ortmannia* dont l'exopodite uropodial présente toujours une ligne articulaire soutenue par des épines, mais avec des variations considérables dans le nombre de ces dernières et dans la longueur de la ligne. Ces variations mesurent, pour ainsi dire, le degré d'adaptation des espèces dans le sens atyien ; elles sont fort étendues quand on passe d'une espèce à l'autre mais assez réduites dans le sein même d'une espèce. A tous ces points de vue, elles me paraissent fournir une base sérieuse et solide à la classification des Caridines.

Un autre caractère de valeur presque égale est tiré du développement des pédoncules antennulaires. Il est facile de constater que les Caridines les plus primitives, c'est-à-dire les plus sveltes et sans doute les plus légères, se distinguent par la longueur de ces pédoncules, tandis que les plus évoluées, qui sont en même temps les plus lourdes, présentent des pédoncules épais et courts. Les dimensions de la carapace étant d'ordinaire peu variables, il s'ensuit qu'on pourra fixer assez bien le point d'évolution d'une espèce en déterminant le rapport qui existe entre la longueur préorbitaire des pédoncules et la longueur post-orbitaire de la carapace. Ce rapport peut être plus grand que 1 ou tomber au-dessous de 0·50 ; pour une espèce donnée, il est beaucoup moins constant que le nombre des épines uropodiales, mais ses variations n'excèdent pas certaines limites et on peut les utiliser dans la classification pour établir des groupements. Il va sans dire qu'on n'observe pas un parallélisme absolu entre les transformations des pédoncules antennulaires et celles de l'exopodite uropodial ; les deux caractères sont indépendants encore que relatifs l'un et l'autre à l'évolution des Caridines.

Un troisième caractère, de nature bien différente, doit être également introduit dans la classification des Caridines, il est tiré de l'arceau qui relie à leur base les pédoncules antennulaires. Chez les formes primitives, cet arceau est peu dilaté dans sa partie médiane où il s'élargit en triangle et forme deux pans réunis par une arête obtuse, peu saillante, et souvent même peu distincte ; dans les *Atya* au contraire, et dans plusieurs *Ortmannia*, il s'élargit bien davantage et son arête s'élève en une carène verticale haute, et à bords tranchants. La première disposition semble être l'apanage des Caridines ; pourtant, quelques-unes de ces dernières présentent la seconde et constituent, par là même, une petite

série naturelle fort bien caractérisée. Cette série prend place parmi les espèces où les épines uropodiales sont nombreuses et les pédoncules antennulaires de faible ou médiocre longueur ; elle ne renferme que des espèces à évolution très avancée dont la *C. singhalensis* Ortm. est, à tous égards, une des Caridines les plus éloignées du type primitif.

Je donne ci-après une ébauche de classification établie sur ces bases ; les caractères de l'arceau des antennules y occupent le premier rang parce qu'ils sont tranchés et permettent de diviser les Caridines en deux groupes primordiaux fort distincts. Le second de ces groupes, celui où l'arceau antennulaire est caréné, me paraît des plus naturels ; quant au premier, qui est beaucoup plus étendu, il se subdivise en deux séries d'après la longueur des pédoncules antennulaires : une série primitive où le rapport qui exprime cette longueur dépasse 0·80, et une série plus évoluée qui comprend les autres formes. Dans l'état actuel de nos connaissances, il paraît impossible d'établir des subdivisions en utilisant le nombre des épines uropodiales, mais ce nombre, comme je l'ai dit plus haut, a une importance spécifique de premier ordre et j'ai eu soin de l'indiquer en regard du nom de chaque espèce. J'ai indiqué de même le nombre des épines qui se trouvent sur le bord du doigt des pattes postérieures (p^5) car, en dépit de ses variations étendues, il offre une importance spécifique très réelle, comme l'a montré M. de Man. C'est également à M. de Man (*1908*) que l'on doit l'heureuse introduction, dans la systématique caridinienne, du rapport qui existe, dans les pattes ambulatoires, entre la longueur du propodite et celle des doigts. Beaucoup d'autres caractères moins importants doivent être utilisés pour la détermination des espèces ; on les trouvera indiqués dans le tableau ci-joint.

Ce tableau n'est qu'une ébauche, non seulement parce qu'il est limité aux seules espèces dont j'ai vu des exemplaires, mais aussi parce que certaines de ces dernières étaient représentées par un très petit nombre de spécimens, quelquefois par un seul ; or, il faut de nombreux individus pour bien fixer les caractères d'une espèce, l'exemple des *C. brevirostris* et *Richtersi* en donne la preuve. Tel qu'on le trouve plus loin, ce tableau présentera toutefois quelques avantages, dont le plus important, à coup sûr, est celui de prêter aux critiques et, par là, de hâter la production d'une œuvre définitive. C'est pourquoi je me permets de le relever ici ; n'est-il pas, au surplus, le fruit de mes recherches sur les variations de la *Caridina brevirostris* ? Etant données ces variations, il est trop évident qu'on ne pouvait mettre en ligne de compte les caractères considérés jusqu'ici comme primordiaux, je veux dire ceux du rostre et ceux des chélipèdes ; ces caractères ne sont pas sans valeur pour certaines espèces, mais ils varient tellement chez la plupart qu'on doit les exclure d'un tableau systématique.

Dans le tableau, le nombre des spinules des doigts des pattes ambulatoires postérieures est précédé du symbole p^5, et celui des épines uropodiales du symbole *ur.*

1°. Groupe des Caridines où l'arceau antennulaire est dépourvu de carène.

A¹ Rapport de la longueur préorbitaire des pédoncules antennulaires à la longueur post-orbitaire de la carapace égal ou supérieur à 0·80.

B¹ Ce rapport est égal ou supérieur à l'unité ; p^5 ? ; ur. 10—11 *vitiensis* Borr., 1898 (Fidji).

B² Ce rapport est inférieur à l'unité.

C¹ Angle antéro-inférieur de la carapace longuement tronqué et fort peu au-dessous de l'angle infra-orbitaire ; p^5 45—50 ; ur. 9—10
ensifera Schenkel, 1902 (Célèbes).

C² Angle antéro-inférieur de la carapace obtus et fort éloigné de l'orbite.

D¹ Doigt de p^5 subtriangulaire et égalant presque la moitié du propode ; p^5 48—52 ; ur. 14—15 ... ... *propinqua* de Man, 1908 (Indes ?).

D² Doigt de p^5 à bords subparallèles égalant moins du $\frac{1}{3}$ et plus du $\frac{1}{5}$ du propode ; p^5 30—56 ; ur. 8—15 ... ... *nilotica* Roux, 1833 (Afrique orient. et région indo-pacifique).

D³ Doigts de p^3 et de p^5 subtriangulaires et égalant au plus le $\frac{1}{5}$ du propode.

E¹ Angle sous-antennaire prolongé en épine ; p^5 34—50 ; ur. ?
brachydactyla de Man ; 1908 (Célèbes, Flores, etc.).

E² Angle sous-antennaire sans épine ; p^5 25—30 ; ur. 13—14
multidentata Stimpson, 1860 (Célèbes).

A² Rapport de la longueur préorbitaire des pédoncules antennulaires à la longueur post-orbitaire de la carapace inférieur à 0·80.

B¹ Prolongement épipodial des maxillipèdes postérieurs long, étroit et arqué ; p^5 42—60 ; ur. 10—11 ... ... *Simoni* Bouvier, 1904 (Ceylan).

B² Prolongement épipodial des maxillipèdes postérieurs droit ou peu arqué, de longueur faible ou médiocre.

C¹ Le doigt de p^5 plus court que le $\frac{1}{3}$ du propode.

D¹ Les spinules du doigt de p^3 et de p^4 toutes étroites (doigts des pattes ambulatoires ayant au moins le $\frac{1}{4}$ du propode) ; p^5 52 ; ur. 7
gracillima Lanchester, 1901 (rég. de Singora).

D² La spinule distale des doigts de p^3 et de p^4 bien plus grosse que les autres.

E¹ L'angle infra-orbitaire et souvent aussi l'angle sous-antennaire sont terminés en épine ; pédoncules oculaires nettement dilatés dans la région cornéenne.

F¹ L'acicule antennulaire atteint ou dépasse le bout distal du 1ᵉʳ article des pédoncules ; p^5 15 ; ur. 15—16
serratirostris de Man, 1892 (Seychelles, Flores, etc.).

F² L'acicule antennulaire n'atteint pas le bout distal du 1ᵉʳ article des pédoncules.

G¹ L'épine antennulaire atteint presque le milieu du 2ᵉ article des pédoncules ; p^5 27 ; ur. 7—9
fossarum Heller, 1862 (Perse, Syrie).

G² L'épine antennulaire atteint au plus le bout du tiers basal du 2ᵉ article pédonculaire.

H¹ Pédoncules oculaires presque aussi larges que longs ; p^5 20 ; ur. 8—9
brevicarpalis de Man, 1892 (Célèbes).

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H² Pédoncules oculaires nettement plus longs que larges.

I¹ Angle uropodial franchement aigu.

K¹ Le doigt de p^5 égale environ le $\frac{1}{3}$ du propode ; p^5 ? ; ur. 20 *pareparensis* de Man, 1862 (Célèbes).

K² Le doigt de p^5 égale environ le $\frac{1}{4}$ du propode ; p^5 47—50 ; ur. 9—11 *madagascariensis* Bouvier, 1904 (Madagascar).

I² Angle uropodial obtus ou mucroné.

K¹ Le doigt de p^5 n'égale pas le $\frac{1}{4}$ du propode ; angle antéro-inférieur de la carapace court et subaigu ; p^5 31—53 ; ur. 11—14 ... *Richtersi* Thalliwitz, 1891 (Maurice).

K² Le doigt de p^5 égale plus du $\frac{1}{4}$ et moins du $\frac{1}{3}$ du propode ; angle antéro-inférieur de la carapace largement arrondi.

L¹ 5 épines sur le doigt de p^3 ; 46—50 ; ur. 8—10 *Grandidieri* Bouvier, 1904 (Madagascar).

L² 6 à 8 épines sur le doigt de p^3 ; p^5 45—60 ; ur. 11—15 *spathulirostris* Richters (Maurice).

E² L'angle sous-antennaire et parfois aussi l'angle infra-orbitaire ne se prolongent pas en épine ; pédoncules oculaires peu ou pas dilatés.

F¹ Le rapport entre la longueur des pédoncules antennulaires et celle de la carapace supérieur à 0·50.

G¹ Les doigts de p^3 et de p^5 égalent au plus le $\frac{1}{4}$ du propode ; p^5 28—37 ; ur. 14—21 *brevirostris* Stimpson, 1860 (Loo-Choo, Seychelles).

G² Le doigt de p^5 égale environ le $\frac{1}{3}$ du propode ; p^5 28—30 ; ur. 8—10 *isaloensis* Coutière, 1899 (Madagascar).

F² Le rapport entre la longueur des pédoncules antennulaires et celle de la carapace égal au plus à 0·50 ; yeux très réduits ; p^5 28—30 ; ur. 8—10 *Mauritii* Bouvier, 1912 (Maurice).

C² Le doigt de p^5 égale au moins le $\frac{1}{3}$ du propode.

D¹ L'angle infra-orbitaire et l'angle sous-antennaire sont terminés en épine.

E¹ Propodite des pattes ambulatoires droit et assez grêle, égalant plus de 3 fois la longueur des doigts dans les pattes 3 et 4.

F¹ Doigt de p^5 subtriangulaire égalant à peu près $\frac{1}{2}$ du propode ; p^5 75—95 ; ur. 13 ... ... *laevis* Heller, 1862 (Java).

F² Doigt de p^5 égalant environ le $\frac{1}{3}$ du propode.

G¹ Epines uropodiales nombreuses, 20 en moyenne *pareparensis* de Man.

G² Epines uropodiales peu nombreuses, 10 ou 11 ordinairement ; p^5 42 *togoensis* Hilgendorf, 1893 (Afrique occidentale).

E² Propodite des pattes ambulatoires large et nettement arqué, n'égalant pas 3 fois la longueur des doigts ; p^5 54 ; ur. 12—14 *Davidi* Bouvier, 1904 (Inkiafou).

D² Les angles infra-orbitaire et sous-antennaire sont réduits et ne se terminent pas en épine.

E¹ Les doigts de p^3, p^4 n'égalent pas le $\frac{1}{3}$ du propode.

F¹ Propodite des pattes ambulatoires large ; épine antennulaire normale ; p^5 45 ; ur. 9 ... ... *timorensis* de Man, 1893 (Timor).

F² Propodite des pattes ambulatoires assez grêle ; épine antennulaire très réduite ... ... *isaloensis* Coutière.

E² Les doigts des pattes ambulatoires sont assez grêles et plus longs que le $\frac{1}{3}$ du propode ; p^5 45—60 ; ur. 10—11 *edulis* Bouvier, 1904 (Madagascar).

2°. Groupe des Caridines où l'arceau antennulaire est armé d'une carène forte et tranchante.

(Dans ce groupe, le nombre des épines uropodiales est supérieur à 15, le rapport de la longueur des pédoncules antennulaires à celle de la carapace inférieur à 0·80.)

A¹ Acicule antennulaire très aigu.

B¹ Le pédoncule antennaire dépasse peu le milieu de l'écaille.

C¹ Le doigt de p^5 est égal au $\frac{1}{5}$ du propode ; carène antennulaire médiocre ; p^5 50 ; ur. 22—23 ... ... *japonica* de Man, 1892 (Japon).

C² Le doigt de p^5 plus petit que le $\frac{1}{3}$ et plus long que le $\frac{1}{4}$ du propode ; carène antennulaire bien développée.

D¹ Angle antéro-inférieur de la carapace largement arrondi.

E¹ Bord antéro-inférieur du 1er épimère abdominal arrondi, au moins chez la femelle ; p^5 58 ; ur. 22—25 ... *angulata* Bouvier, 1905 (Madagascar).

E² Bord antéro-inférieur du 1er épimère abdominal droit ou concave, au moins chez la femelle ; p^5 60—65 ; ur. 19—22 *Weberi* de Man, 1892 (Flores, Célèbes, etc.).

D² Angle antéro-inférieur de la carapace court et subaigu ; bord antéro-inférieur du 1er épimère abdominal droit ou concave, au moins chez la femelle ; p^5 60 ; ur. 19—20 ... ... *typus* Edw., 1837 (Indo-Pacifique).

B² Le pédoncule antennaire dépasse largement le milieu de l'écaille et atteint presque ou dépasse le bout distal du 2e article des pédoncules antennulaires ; carène antennulaire bien développée ; le doigt de p^5 plus court que le $\frac{1}{4}$ du propode ; p^5 ? ; ur. 22 ... ... *parvirostris* de Man, 1892 (Flores).

A² Acicule antennulaire en lame obtuse ; le doigt de p^5 plus long que le $\frac{1}{3}$ du propode ; p^5 57 ; ur. 30—40 ... ... *singhalensis* Ortmann, 1894 (Ceylan).

J'ai montré ailleurs (*1912b*, 295) que la *Caridina apiocheles* Bouvier est une simple forme de la *C. Richtersi* et qu'au lieu de provenir des Seychelles, comme je l'avais supposé tout d'abord, elle est propre à l'île Maurice ; je crois bien que la *C. syriaca* Bouvier devra être identifiée avec la *C. fossarum* Heller et on a vu plus haut que la *C. similis* Bouvier

appartient à la même espèce que la *C. brevirostris*. J'ajoute qu'il m'a paru convenable d'élever au rang spécifique la *C. nilotica* var. *brachydactyla* de M. de Man et d'identifier la *C. gracilirostris* de Man avec la *C. nilotica*.

Diagnose de la *Caridina brevirostris*. Nous pouvons maintenant résumer, dans une diagnose, les caractères de la *C. brevirostris*. Voici les termes de cette diagnose.

Carapace un peu voûtée dorsalement, assez courte, sa hauteur maximum égalant environ les $\frac{4}{5}$ de la longueur post-orbitaire de la carapace ; angle antéro-inférieur largement arrondi, angle infra-orbitaire prolongé en une pointe qui devient parfois nulle. Pédoncules oculaires plus longs que larges, peu ou pas dilatés dans la région cornéenne. Arceau antennulaire sans carène ; acicule plus court que le 1er article des pédoncules ; épine antennulaire très variable, égalant au plus le $\frac{1}{3}$ du 2e article des pédoncules ; rapport de ces derniers à la longueur post-orbitaire de la carapace 0·71—0·54. Angle sous-antennaire infléchi en dedans, souvent aigu, mais non spiniforme, parfois peu saillant et arrondi ; le pédoncule des antennes ne dépasse que très-rarement le milieu de l'écaille. Prolongement épipodial des maxillipèdes postérieurs en lame triangulaire droite un peu plus courte que l'épipodite. Pattes ambulatoires assez grêles et à propode presque droit ; dans les pattes ambulatoires antérieures le doigt subtriangulaire porte de 5 à 7 épines dont la première est de beaucoup la plus forte ; dans les pattes postérieures, ses bords sont presque toujours subparallèles et il porte 26 à 37 spinules légèrement incisées. La rapport de la longueur du propodite à celle du doigt varie de 4 à 5·1 dans les pattes ambulatoires antérieures, et de 4 à 5·2 dans les postérieures. Bord antéro-inférieur des épimères du 1er segment abdominal droit ou un peu concave chez la femelle, un peu convexe chez les mâles et les jeunes ; l'angle postérieur de l'épimère du 4e segment est arrondi ou largement obtus, celui de l'épimère suivant aigu ou subaigu, à bords nettement convexes. Angle uropodial presque toujours aigu, parfois mucroné, à bord supérieur droit ou concave, et pour le moins aussi long que la distance de sa base au bord opposé ; ligne articulaire de l'exopodite uropodial un peu sigmoïde, atteignant à peu près l'axe médian de l'appendice et armée de 14 à 21 spinules, sans compter la pointe terminale. Les œufs sont volumineux, leur grand diamètre atteignant pour le moins 1 mm. et le petit environ 0·8.

Le rostre et les chélipèdes sont extraordinairement variables comme je l'ai montré plus haut.

La position zoologique et les affinités de l'espèce se trouvent indiquées dans le tableau ci-dessus.

Caridines recueillies en divers points des Seychelles sous la direction de M. Stanley Gardiner.

Les Caridines qui m'ont été obligeamment communiquées par M. Stanley Gardiner furent toutes recueillies aux Seychelles sous la direction de ce savant. Elles comprennent trois espèces, dont une extraordinairement prédominante, la *C. brevirostris*, et deux autres moins répandues, la *C. typus* et la *C. serratirostris*, cette dernière étant de beaucoup la plus rare.

Le tout se trouvait réparti dans douze flacons, prevenant chacun d'une pêche

particulière. Voici le relevé très approximatif du nombre des spécimens contenus dans les divers flacons.

No. 3. Mahé, Cascade, 800 pieds, 8 décembre, 1905.

C. brevirostris; 300 individus, la plupart de la forme *typica*, 15 °/₀ des deux autres formes, tous très variés.

C. typus; 175 individus de moyenne ou de petite taille, les plus grands ne mesurent pas plus de 30 mm.

C. serratirostris; 30 individus.

No. 7. Mahé, Cascade, 1000 pieds.

C. brevirostris; 150 individus de la forme *typica*, peu variés; à rostre assez court.

No. 10. Mahé, Cascade R.

C. brevirostris; 50 individus de la forme *typica*, peu variés; à rostre assez court.

No. 8. Mahé, Château-Margot, 1600 pieds.

C. brevirostris; 400 individus de la forme *typica*, à rostre court ou assez court, certains avec des chélipèdes plus ou moins ortmanniens; 60 *Gardineri* (ou *similis*), à rostre peu allongé et peu ou pas caréné ventralement, à chélipèdes variés.

No. 12. Mahé, Château-Margot, 1600 pieds.

C. brevirostris; 150 individus de la forme *typica*, à rostre court ou assez court, certains (9) plus ou moins ortmanniens; 30 *Gardineri* (ou *similis*) semblables à ceux du numéro 8.

No. 1. Praslin.

C. brevirostris; 50 exemplaires de la forme *typica*, très variés et à rostre assez souvent denticulé du côté ventral; 950 *Gardineri* (ou *similis*) également très variés et à rostre presque toujours denticulé en dessus.

C. typus; 23 exemplaires de grande ou de moyenne taille.

No. 2. Praslin.

C. brevirostris; 50 *typica* et 700 *Gardineri* (ou *similis*) semblables aux précédents.

C. typus; 134 individus semblables aux précédents.

No. 5. Praslin, Stream de La Blague.

C. brevirostris; 50 *typica* tout à fait normaux, pourtant avec certaines variations du rostre et des chélipèdes; 2 *Gardineri*, l'un à rostre court, l'autre à rostre assez long.

No. 6. Praslin.

C. brevirostris; 70 exemplaires de la forme *typica* à rostre plus ou moins modifié et passages aux chélipèdes plus ou moins ortmanniens.

No. 9. Praslin, marais de la Côte d'Or.

C. typus; 22 exemplaires adultes, mais petits et ne dépassant guère 25 mm.

No. 9. Morne Seychellois, 22 nov. 1905.

C. brevirostris; 100 exemplaires de la forme *typica*, normaux, avec les chélipèdes et le rostre assez peu variés.

No. 11. Silhouette.

C. brevirostris; 75 *typica* dont 25 plus ou moins ortmanniens, tous avec le rostre court ou assez court; 200 *Gardineri* dont 50 avec des tendances ortmanniennes, tous avec le rostre plutôt court et armé au moins de quelques spinules sur la carène dorsale.

Je n'ai pas trouvé dans la collection deux espèces signalées par M. Borradaile, l'une avec certitude, la *C. nilotica* Roux, l'autre avec doute, la *C. multidentata* Stimpson; les autres espèces mentionnées par cet auteur sont la *C. typus*, la *C. brevirostris*, la *C. similis* et la *C. singhalensis*; il est certain que M. Borradaile a déterminé sous le nom de *singhalensis* les exemplaires de *brevirostris* à rostre fort court, et quant à la *C. similis*, j'ai montré plus haut qu'elle doit être considérée comme une forme de la *C. brevirostris*.

Au total, les Caridines recueillies aux Seychelles comprennent environ 3760 exemplaires dont 1400 *C. brevirostris typica*, 2000 *Gardineri* (ou *similis*), 354 *C. typus* et 30 *C. serratirostris*. Cette dernière espèce n'a pas été signalée par M. Borradaile, mais peut-être faut-il y rapporter les exemplaires que cet auteur attribuait avec doute à la *C. multidentata* St.

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EXPLICATION DES PLANCHES.

Planche 27.

Fig. 1. La carapace vue de côté dans une femelle adulte de Praslin (No. 1); longueur post-orbitaire 5 mm. 2, hauteur maximum 4 mm. D'après la structure du rostre qui est de longueur médiocre cet exemplaire tient des trois formes de l'espèce.

Fig. 2. Partie antérieure de la carapace et appendices céphaliques dans un mâle adulte de la forme *Gardineri* capturé à Praslin (No. 2). Gr. 10.

Fig. 3. L'arceau antennulaire vu en dessus dans sa partie médiane; ♀ de la fig. 1. Gr. appr. 20.

Fig. 4. Pédoncule antennaire vu par dessous dans la même femelle. Gr. 20.

Fig. 5. Maxillipède postérieur droit vu du côté ventral; les soies médianes du dernier article ne sont ni assez nombreuses, ni assez serrées. ♂ de la fig. 2. Gr. 20.

Fig. 6. Portion de l'article basilaire du même maxillipède droit montrant l'épipodite avec son prolongement triangulaire. Gr. 46.

Fig. 7. Doigt d'une patte ambulatoire antérieure; ♀ de la fig. 1. Gr. 96.

Fig. 8. Patte ambulatoire postérieure droite, face externe; ♂ de la fig. 2. Gr. 20.

Fig. 9. Patte ambulatoire postérieure droite, face externe; ♀ de la fig. 1. Gr. 20.

Fig. 10. Doigt de la patte représentée dans la fig. 9. Gr. 96.

Fig. 11. Bord antéro-inférieur de l'épimère droit du 1er segment abdominal; ♂ de la fig. 2. Gr. 20.

Fig. 12. Le même bord dans la ♀ de la fig. 1. Gr. 20.

Fig. 13. Epimère droit du 4e segment abdominal; ♀ de la fig. 1. Gr. 20.

Fig. 14. Epimère droit du 5e segment abdominal dans la même femelle. Gr. 20.

Fig. 15. Endopodite du pléopode antérieur droit dans le ♂ de la fig. 2; face postérieure (le bout de l'endopodite est accidentellement réfléchi). Les soies, denticulées au bout, sont barbelées sur le reste de leur étendue. Gr. 46.

Fig. 16. Appendice interne de l'endopodite du 2e pléopode droit dans le même mâle; face postérieure. Gr. 96.

Fig. 17. Telson et uropode droit, vus de côté; ♀ de la fig. 1. Gr. 20.

Fig. 18. Angle formé par l'article basilaire des uropodes; ♂ de la fig. 2.

Fig. 19. Extrémité de l'exopodite uropodial avec ses épines de soutien; ♀ de la fig. 2. Gr. 20.

Fig. 20. Ligne articulaire de cet exopodite avec ses épines de soutien. Gr. 43.

Fig. 21. Extrémité du telson dans le même individu. Gr. 43.

Planche 28.

Les figs. 1 à 10 sont surtout consacrées à la réduction longitudinale du rostre, les suivantes à la réduction de la carène ventrale.

Figs. 1 et 1′. Rostre et appendices céphaliques vus de côté (1) et dorsalement (2), dans une femelle *Gardineri* de Praslin (No. 2). Gr. 10.

Figs. 2 et 2′. Les mêmes parties dans une autre ♀ *Gardineri* de Praslin (No. 2). Gr. 10.

Figs. 3 et 3′. Les mêmes parties dans une troisième femelle *Gardineri* de Praslin (No. 2). Gr. 10.

Figs. 4 et 4′. Les mêmes parties (sauf les pédoncules antennaires dans 4 et en outre les pédoncules antennulaires dans 4′) chez une femelle adulte de Praslin (No. 1). Gr. 10.

Figs. 5 et 5′. Les mêmes parties que dans la fig. 4 chez une femelle *Gardineri* où l'armature du rostre est des plus réduites. Mahé, Château-Margot (No. 8). Gr. 20.

Figs. 6 et 6′. Rostre et appendices céphaliques dans une femelle *Gardineri* passant à *typica*. Praslin (No. 2). Gr. 10.

Figs. 7 et 7′. Les mêmes parties (mais seulement avec le rostre et les pédoncules oculaires dans 2′) chez une femelle *typica* où l'on voit encore la carène dorsale. Mahé, Cascade (No. 10). Gr. 10.

Figs. 8 et 8′. Rostre, avec les pédoncules oculaires et antennulaires dans la fig. 8, sans ces derniers dans la fig. 8′, chez un mâle *typica* où la carène dorsale a disparu. Praslin (No. 1). Gr. 10.

Figs. 9 et 9′. Rostre et appendices céphaliques dans un mâle *typica* où le rostre est arrondi, sans traces de carènes impaires. Praslin (No. 2). Gr. 10.

Figs. 10 et 10′. Rostre et appendices céphaliques dans un mâle *typica* où le rostre, dépourvu de carènes impaires, atteint sa réduction maximum, encore qu'il présente une spinule dorsale. Praslin (No. 1). Gr. 20.

Figs. 11 et 11′. Rostre et appendices céphaliques dans une femelle *similis* très longirostre où la carène ventrale est réduite à sa partie antérieure. Praslin (No. 2). Gr. 10.

Figs. 12 et 12′. Rostre avec les pédoncules oculaires et antennulaires (sans ces derniers dans 12′), chez une femelle *Gardineri* où la carène ventrale se réduit à une faible saillie postérieure. Praslin (No. 2). Gr. 10.

Figs. 13 et 13′. Rostre avec les appendices céphaliques chez une femelle *typica* très longirostre. Praslin (No. 2). Gr. 10.

Figs. 14 et 14′. Rostre et parties voisines des appendices dans une femelle *Gardineri* à rostre court. Praslin (No. 2). Gr. 10.

Figs. 15 et 15′. Rostre et parties voisines des appendices dans une jeune femelle *typica* où la carène ventrale a disparu. Silhouette (No. 11). Gr. 20.

Planche 29.

Figs. 1 et 1′. Chélipèdes d'un mâle de Praslin (No. 1), *Gardineri* à pinces très caridiniennes munies d'un stylet terminal.

1. Chélipède antérieur droit, face supéro-externe. Gr. 23.
1ª. Extrémité du doigt mobile de la pince, face interne, avec le stylet terminal et le premier rang de soies denticulées d'un de ses bords. Gr. 96.
1ᵇ. Le stylet terminal et les deux premières soies denticulées d'un bord. Gr. 423.
1′. Chélipède postérieur droit, face supéro-externe; l'armature des doigts est la même que dans le chélipède antérieur. Gr. 23.

Figs. 2 et 2′. Chélipèdes d'un mâle *typica* recueilli à Praslin (No. 2); c'est le mâle de la fig. 9, Pl. 28.

2. Chélipède antérieur droit, face supéro-externe. Gr. 23.
2′. Chélipède postérieur droit, face supéro-externe. Gr. 23.

Figs. 3 et 3′. Chélipèdes d'une femelle *Gardineri* recueillie à Praslin (No. 2); c'est la femelle de la fig. 3, Pl. 28. Ongle au chélipède antérieur, stylet au postérieur.

3. Chélipède antérieur gauche, face supéro-externe. Gr. 20.
3′. Chélipède postérieur gauche, face supéro-externe. Gr. 20.

Figs. 4 et 4′. Chélipèdes d'une femelle *Gardineri* à rostre médiocre. Praslin (No. 2). Ongle aux chélipèdes antérieurs dont la pince est ortmannienne, stylet aux chélipèdes postérieurs qui sont encore très caridiniens.

4. Chélipède antérieur droit, face supéro-externe. Gr. 23.
4ª. Extrémité du doigt mobile de la pince, face interne avec l'ongle terminal et le premier rang de soies denticulées d'un des bords. Gr. 96.
4ᵇ. La 9ᵉ soie de cette rangée. Gr. 423.
4ᶜ. La 14ᵉ soie de la même rangée. Gr. 423.
4′. Chélipède postérieur droit, face supéro-externe. Gr. 23.

Figs. 5 et 5′. Chélipèdes d'une femelle *Gardineri* où l'armature rostrale est des plus réduites. Mahé, Château-Margot (No. 8). C'est la femelle de la fig. 5, Pl. **28**; le chélipède antérieur est très ortmannien, le suivant un peu moins, les doigts de tous deux se terminent par un ongle.

5. Chélipède antérieur droit, face supéro-externe. Gr. 23.

5′. Chélipède postérieur droit, face supéro-externe. Gr. 23.

5′ª. Ongle terminal des doigts de ce chélipède, avec les trois premières soies denticulées qui l'avoisinent. Gr. 211.

Fig. 6. Chélipèdes d'une jeune femelle *typica* recueillie à Silhouette (No. 11); c'est la femelle de la fig. 15, Pl. **28**. Les chélipèdes y sont presque aussi franchement ortmanniens que dans la forme *Ortmannia Edwardsi* de la *Caridina Richtersi*, mais le carpe des chélipèdes postérieurs n'a pas encore d'échancrure distale et les doigts des deux chélipèdes n'ont qu'un seul ongle au lieu de 5. Cet individu, comme le précédent, réalise la forme *pré-ortmannienne* de l'espèce.

6. Chélipède antérieur droit, face supéro-externe. Gr. 23.

6ª. Ongle terminal du doigt mobile de ce chélipède avec les soies denticulées avoisinantes; ces soies sont insuffisamment représentées, étant identiques à celles de 46. Gr. 96.

6′. Chélipède postérieur droit, face supéro-externe. Gr. 23.

E L B del

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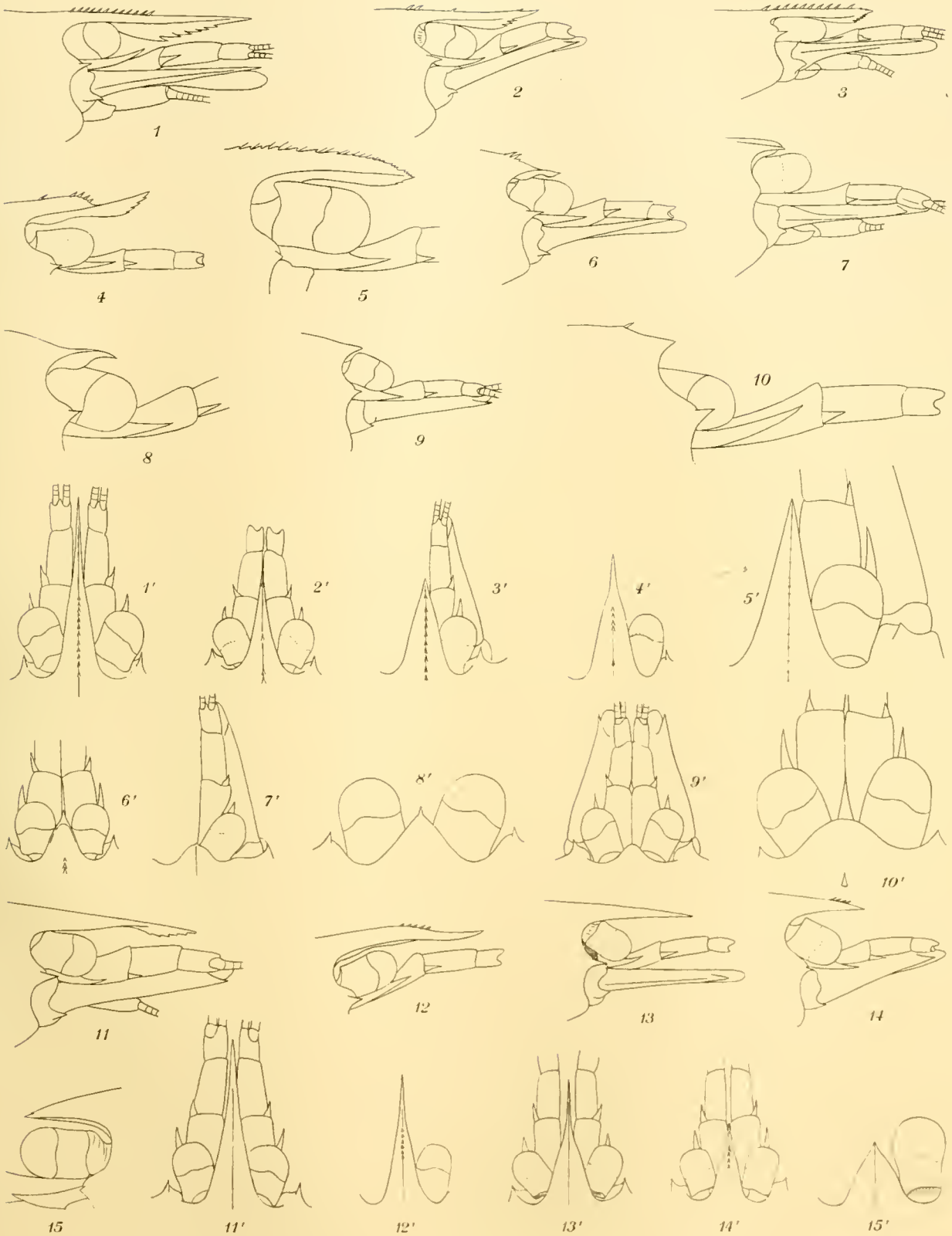
LES CARIDINES DES SEYCHELLES



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Cambridge:
PRINTED BY JOHN CLAY, M.A.
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MARINE BIOLOGICAL LABORATORY WOODS HOLE LIBRARY MASS.

THE

TRANSACTIONS

OF

THE LINNEAN SOCIETY OF LONDON.

THE PERCY SLADEN TRUST EXPEDITION

TO

THE INDIAN OCEAN IN 1905,

UNDER THE LEADERSHIP OF

MR J. STANLEY GARDINER, M.A.

VOLUME IV.

REPORTS Nos. 1—10 of this volume; Nos. 59—68 of the whole series.

LONDON:

PRINTED FOR THE LINNEAN SOCIETY

BY JOHN CLAY, M.A. AT THE UNIVERSITY PRESS, CAMBRIDGE.

SOLD AT THE SOCIETY'S APARTMENTS, BURLINGTON HOUSE, PICCADILLY, W.,

AND BY LONGMANS, GREEN, AND CO., PATERNOSTER-ROW.

March 1912.

LINNEAN SOCIETY OF LONDON.

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	Part III.	1909	0	6	0	0	4	6
	Part IV.	1909	0	12	0	0	9	0
	Part V.	1909	0	2	0	0	1	6
	Part VI.	1910	0	11	0	0	8	3
	Part VII.	1910	0	5	0	0	3	9
	Part VIII.	1911	0	4	0	0	3	0
	Part IX.	1911	0	2	6	0	2	0
	Part X. (In progress.)	1911	0	2	6	0	2	0
XII.	Part I.	1907	1	8	0	1	1	0
	Part II.	1907	1	4	0	0	18	0
	Part III.	1908	0	16	0	0	12	0
	Part IV.	1909	1	10	0	1	2	6
	Part V. Index	1909	0	5	0	0	3	9
XIII.	Part I.	1909	1	4	0	0	18	0
	Part II.	1910	2	3	0	1	12	3
	Part III.	1910	0	16	0	0	12	0
	Part IV. Index	1910	0	5	0	0	3	9
XIV.	Part I.	1910	1	18	0	1	8	6
	Part II.	1911	1	0	0	0	15	0
	Part III.	1911	1	8	0	1	1	0
	Part IV. Index	1912	0	5	0	0	3	9
XV.	Part I.	1912	1	9	0	1	1	9

THE

TRANSACTIONS

OF

THE LINNEAN SOCIETY OF LONDON.

MARINE BIOLOGICAL LABORATORY WOODS HOLE LIBRARY MASS.

THE PERCY SLADEN TRUST EXPEDITION

TO

THE INDIAN OCEAN IN 1905,

UNDER THE LEADERSHIP OF

MR J. STANLEY GARDINER, M.A.

VOLUME IV.

REPORTS Nos. 11—18 of this volume; Nos. 69—76 of the whole series.

LONDON:

PRINTED FOR THE LINNEAN SOCIETY

BY JOHN CLAY, M.A. AT THE UNIVERSITY PRESS, CAMBRIDGE.

SOLD AT THE SOCIETY'S APARTMENTS, BURLINGTON HOUSE, PICCADILLY, W.,

AND BY LONGMANS, GREEN, AND CO., PATERNOSTER-ROW.

September 1912.

LINNEAN SOCIETY OF LONDON.

MEMORANDA CONCERNING TRANSACTIONS.

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The Second Series of the Transactions is divided into Zoological and Botanical sections. The prices of the Zoological parts of those which have been published are as undermentioned:—

SECOND SERIES.—ZOOLOGY.

Volume		When Published	Price to the Public £	*s.*	*d.*	Price to Fellows £	*s.*	*d.*
I.	Parts I.–VIII.	1875–79	8	10	0	6	7	6
II.	Parts I. XVIII.	1879–88	7	17	0	5	18	5
III.	Parts I. VI.	1884–88	5	18	0	4	8	6
IV.	Parts I.–III.	1886–88	3	8	0	2	11	0
V.	Parts I.–XI.	1888–94	6	10	6	4	17	9
VI.	Parts I.–VIII.	1894–99	6	17	6	5	3	3
VII.	Parts I.–XI.	1896–1900	6	7	9	4	15	9
VIII.	Part I.	1900	0	10	0	0	7	6
	Part II.	1900	0	10	0	0	7	6
	Part III.	1900	0	10	0	0	7	6
	Part IV.	1901	0	14	0	0	10	6
	Part V.	1901	0	5	0	0	3	9
	Part VI.	1901	0	10	0	0	7	6
	Part VII.	1901	1	8	0	1	1	0
	Part VIII.	1902	0	4	0	0	3	0
	Part IX.	1902	0	5	0	0	3	9
	Part X.	1903	1	0	0	0	15	0
	Part XI.	1903	0	6	0	0	4	6
	Part XII.	1903	0	10	0	0	7	6
	Part XIII. Index		0	2	9	0	2	3
IX.	Part I.	1903	0	9	0	0	6	9
	Part II.	1903	0	8	0	0	6	0
	Part III.	1903	1	4	0	0	18	0
	Part IV.	1904	0	6	0	0	4	6
	Part V.	1904	0	6	0	0	4	6
	Part VI.	1904	0	6	0	0	4	6
	Part VII.	1904	0	6	0	0	4	6
	Part VIII.	1904	0	10	0	0	7	6
	Part IX.	1905	0	6	0	0	4	6
	Part X.	1906	0	12	0	0	9	0
	Part XI.	1907	0	12	0	0	9	0
	Part XII.	1907	0	3	0	0	2	3
	Part XIII.	1907	0	6	0	0	4	6
	Part XIV. Index	1907	0	3	0	0	2	3

SECOND SERIES.—ZOOLOGY (*continued*).

Volume		When Published	Price to the Public £	*s.*	*d.*	Price to Fellows £	*s.*	*d.*
X.	Part I.	1904	0	3	0	0	2	3
	Part II.	1904	0	8	0	0	6	0
	Part III.	1905	0	9	0	0	6	9
	Part IV.	1905	0	10	0	0	7	6
	Part V.	1906	0	7	6	0	5	3
	Part VI.	1906	0	3	0	0	2	3
	Part VII.	1907	0	3	0	0	2	3
	Part VIII.	1907	0	4	0	0	3	0
	Part IX.	1909	1	1	0	0	15	9
	Part X.	1911	0	4	0	0	3	0
	(In progress.)							
XI.	Part I.	1908	0	4	0	0	3	0
	Part II.	1909	0	8	0	0	6	0
	Part III.	1909	0	6	0	0	4	6
	Part IV.	1909	0	12	0	0	9	0
	Part V.	1909	0	2	0	0	1	6
	Part VI.	1910	0	11	0	0	8	3
	Part VII.	1910	0	5	0	0	3	9
	Part VIII.	1911	0	4	0	0	3	0
	Part IX.	1911	0	2	6	0	2	0
	Part X.	1911	0	2	6	0	2	0
	(In progress.)							
XII.	Part I.	1907	1	8	0	1	1	0
	Part II.	1907	1	4	0	0	18	0
	Part III.	1908	0	16	0	0	12	0
	Part IV.	1909	1	10	0	1	2	6
	Part V. Index	1909	0	5	0	0	3	9
XIII.	Part I.	1909	1	4	0	0	18	0
	Part II.	1910	2	3	0	1	12	3
	Part III.	1910	0	16	0	0	12	0
	Part IV. Index	1910	0	5	0	0	3	9
XIV.	Part I.	1910	1	18	0	1	8	6
	Part II.	1911	1	0	0	0	15	0
	Part III.	1911	1	8	0	1	1	0
	Part IV. Index	1912	0	5	0	0	3	9
XV.	Part I.	1912	1	9	0	1	1	9
	Part II.	1912	1	4	0	0	18	0
	Part III.	1912	1	6	0	0	19	6
	Part IV.	(In preparation.)						

MARINE BIOLOGICAL LABORATORY WOODS HOLE LIBRARY MASS.

THE

TRANSACTIONS

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THE LINNEAN SOCIETY OF LONDON.

THE PERCY SLADEN TRUST EXPEDITION

TO

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VOLUME IV.

REPORTS Nos. 19—24 of this volume; Nos. 77—82 of the whole series.

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SOLD AT THE SOCIETY'S APARTMENTS, BURLINGTON HOUSE, PICCADILLY, W.,

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December 1912.

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The Second Series of the Transactions is divided into Zoological and Botanical sections. The prices of the Zoological parts of those which have been published are as undermentioned:—

Second Series.—Zoology.

Volume		When Published	Price to the Public £	*s.*	*d.*	Price to Fellows £	*s.*	*d.*
I.	Parts I.–VIII.	1875–79	8	10	0	6	7	6
II.	Parts I. XVIII.	1879–88	7	17	0	5	18	5
III.	Parts I. VI.	1884–88	5	18	0	4	8	6
IV.	Parts I.–III.	1886–88	3	8	0	2	11	0
V.	Parts I.–XI.	1888–94	6	10	6	4	17	9
VI.	Parts I.–VIII.	1894–99	6	17	6	5	3	3
VII.	Parts I.–XI.	1896–1900	6	7	9	4	15	9
VIII.	Part I.	1900	0	10	0	0	7	6
	Part II.	1900	0	10	0	0	7	6
	Part III.	1900	0	10	0	0	7	6
	Part IV.	1901	0	14	0	0	10	6
	Part V.	1901	0	5	0	0	3	9
	Part VI.	1901	0	10	0	0	7	6
	Part VII.	1901	1	8	0	1	1	0
	Part VIII.	1902	0	4	0	0	3	0
	Part IX.	1902	0	5	0	0	3	9
	Part X.	1903	1	0	0	0	15	0
	Part XI.	1903	0	6	0	0	4	6
	Part XII.	1903	0	10	0	0	7	6
	Part XIII. Index		0	2	9	0	2	3
IX.	Part I.	1903	0	9	0	0	6	9
	Part II.	1903	0	8	0	0	6	0
	Part III.	1903	1	4	0	0	18	0
	Part IV.	1904	0	6	0	0	4	6
	Part V.	1904	0	6	0	0	4	6
	Part VI.	1904	0	6	0	0	4	6
	Part VII.	1904	0	6	0	0	4	6
	Part VIII.	1904	0	10	0	0	7	6
	Part IX.	1905	0	6	0	0	4	6
	Part X.	1906	0	12	0	0	9	0
	Part XI.	1907	0	12	0	0	9	0
	Part XII.	1907	0	3	0	0	2	3
	Part XIII.	1907	0	6	0	0	4	6
	Part XIV. Index	1907	0	3	0	0	2	3

Second Series.—Zoology (*continued*).

Volume		When Published	Price to the Public £	*s.*	*d.*	Price to Fellows £	*s.*	*d.*
X.	Part I.	1904	0	3	0	0	2	3
	Part II.	1904	0	8	0	0	6	0
	Part III.	1905	0	9	0	0	6	9
	Part IV.	1905	0	10	0	0	7	6
	Part V.	1906	0	7	6	0	5	3
	Part VI.	1906	0	3	0	0	2	3
	Part VII.	1907	0	3	0	0	2	3
	Part VIII.	1907	0	4	0	0	3	0
	Part IX.	1909	1	1	0	0	15	9
	Part X. (In progress.)	1911	0	4	0	0	3	0
XI.	Part I.	1908	0	4	0	0	3	0
	Part II.	1909	0	8	0	0	6	0
	Part III.	1909	0	6	0	0	4	6
	Part IV.	1909	0	12	0	0	9	0
	Part V.	1909	0	2	0	0	1	6
	Part VI.	1910	0	11	0	0	8	3
	Part VII.	1910	0	5	0	0	3	9
	Part VIII.	1911	0	4	0	0	3	0
	Part IX.	1911	0	2	6	0	2	0
	Part X. (In progress.)	1911	0	2	6	0	2	0
XII.	Part I.	1907	1	8	0	1	1	0
	Part II.	1907	1	4	0	0	18	0
	Part III.	1908	0	16	0	0	12	0
	Part IV.	1909	1	10	0	1	2	6
	Part V. Index	1909	0	5	0	0	3	9
XIII.	Part I.	1909	1	4	0	0	18	0
	Part II.	1910	2	3	0	1	12	3
	Part III.	1910	0	16	0	0	12	0
	Part IV. Index	1910	0	5	0	0	3	9
XIV.	Part I.	1910	1	18	0	1	8	6
	Part II.	1911	1	0	0	0	15	0
	Part III.	1911	1	8	0	1	1	0
	Part IV. Index	1912	0	5	0	0	3	9
XV.	Part I.	1912	1	9	0	1	1	9
	Part II.	1912	1	4	0	0	18	0

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VOLUME IV.

REPORTS Nos. 25—28 of this volume; Nos. 83—86 of the whole series

with

TITLEPAGE, CONTENTS, AND INDEX.

LONDON:

PRINTED FOR THE LINNEAN SOCIETY

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SOLD AT THE SOCIETY'S APARTMENTS, BURLINGTON HOUSE, PICCADILLY, W.,

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IV.	Parts I.–III.	1886–88	3	8	0	2	11	0
V.	Parts I.–XI.	1888–94	6	10	6	4	17	9
VI.	Parts I.–VIII.	1894–99	6	17	6	5	3	3
VII.	Parts I.–XI.	1896–1900	6	7	9	4	15	9
VIII.	Part I.	1900	0	10	0	0	7	6
	Part II.	1900	0	10	0	0	7	6
	Part III.	1900	0	10	0	0	7	6
	Part IV.	1901	0	14	0	0	10	6
	Part V.	1901	0	5	0	0	3	9
	Part VI.	1901	0	10	0	0	7	6
	Part VII.	1901	1	8	0	1	1	0
	Part VIII.	1902	0	4	0	0	3	0
	Part IX.	1902	0	5	0	0	3	9
	Part X.	1903	1	0	0	0	15	0
	Part XI.	1903	0	6	0	0	4	6
	Part XII.	1903	0	10	0	0	7	6
	Part XIII. Index		0	2	9	0	2	3
IX.	Part I.	1903	0	9	0	0	6	9
	Part II.	1903	0	8	0	0	6	0
	Part III.	1903	1	4	0	0	18	0
	Part IV.	1904	0	6	0	0	4	6
	Part V.	1904	0	6	0	0	4	6
	Part VI.	1904	0	6	0	0	4	6
	Part VII.	1904	0	6	0	0	4	6
	Part VIII.	1904	0	10	0	0	7	6
	Part IX.	1905	0	6	0	0	4	6
	Part X.	1906	0	12	0	0	9	0
	Part XI.	1907	0	12	0	0	9	0
	Part XII.	1907	0	3	0	0	2	3
	Part XIII.	1907	0	6	0	0	4	6
	Part XIV. Index	1907	0	3	0	0	2	3

Second Series.—Zoology (*continued*).

Volume		When Published	Price to the Public £	*s.*	*d.*	Price to Fellows £	*s.*	*d.*
X.	Part I.	1904	0	3	0	0	2	3
	Part II.	1904	0	8	0	0	6	0
	Part III.	1905	0	9	0	0	6	9
	Part IV.	1905	0	10	0	0	7	6
	Part V.	1906	0	7	6	0	5	3
	Part VI.	1906	0	3	0	0	2	3
	Part VII.	1907	0	3	0	0	2	3
	Part VIII.	1907	0	4	0	0	3	0
	Part IX.	1909	1	1	0	0	15	9
	Part X.	1911	0	4	0	0	3	0
	(In progress.)							
XI.	Part I.	1908	0	4	0	0	3	0
	Part II.	1909	0	8	0	0	6	0
	Part III.	1909	0	6	0	0	4	6
	Part IV.	1909	0	12	0	0	9	0
	Part V.	1909	0	2	0	0	1	6
	Part VI.	1910	0	11	0	0	8	3
	Part VII.	1910	0	5	0	0	3	9
	Part VIII.	1911	0	4	0	0	3	0
	Part IX.	1911	0	2	6	0	2	0
	Part X.	1911	0	2	6	0	2	0
	(In progress.)							
XII.	Part I.	1907	1	8	0	1	1	0
	Part II.	1907	1	4	0	0	18	0
	Part III.	1908	0	16	0	0	12	0
	Part IV.	1909	1	10	0	1	2	6
	Part V. Index	1909	0	5	0	0	3	9
XIII.	Part I.	1909	1	4	0	0	18	0
	Part II.	1910	2	3	0	1	12	3
	Part III.	1910	0	16	0	0	12	0
	Part IV. Index	1910	0	5	0	0	3	9
XIV.	Part I.	1910	1	18	0	1	8	6
	Part II.	1911	1	0	0	0	15	0
	Part III.	1911	1	8	0	1	1	0
	Part IV. Index	1912	0	5	0	0	3	9
XV.	Part I.	1912	1	9	0	1	1	9
	Part II.	1912	1	4	0	0	18	0
	Part III.	1912	1	6	0	0	19	6
	Part IV.	1913	0	12	0	0	9	0

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